Aug. 21, 1945. F. PARRY 2,383,152

LUBRICATING DEVICES FOR SEWING MACHINE LOOP-TAKERS

Filed Dec. 21, 1943 2 Sheets-Sheet 1

Fig. 1.

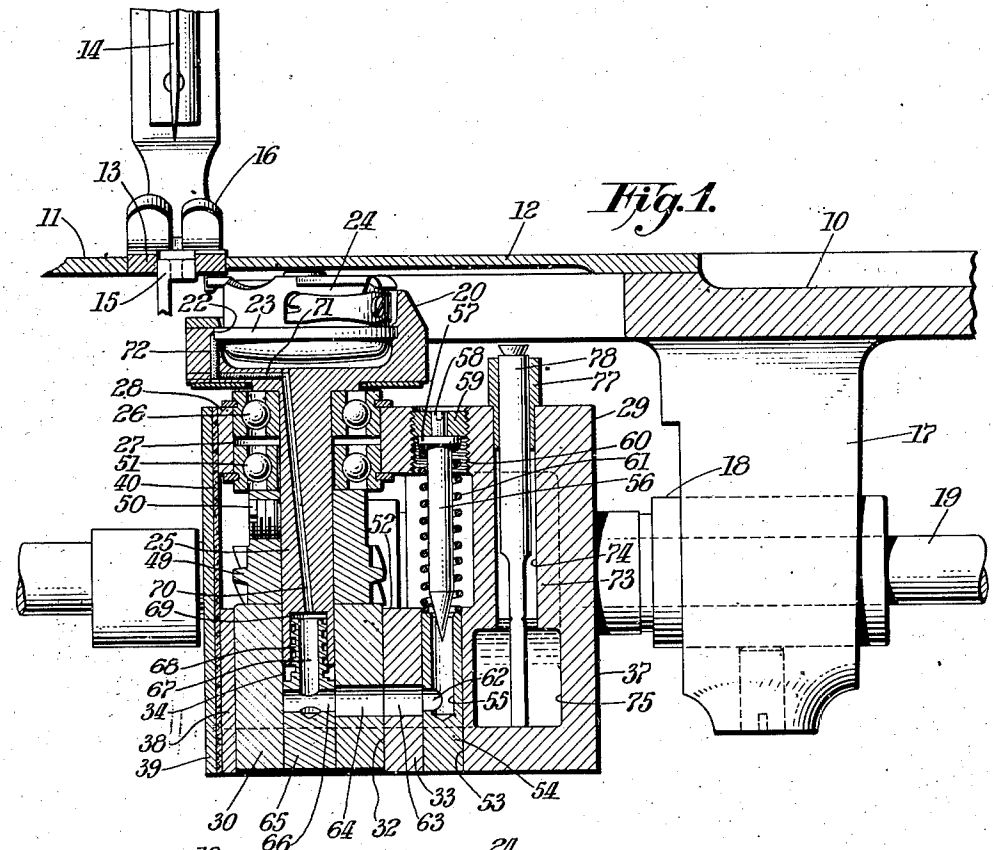
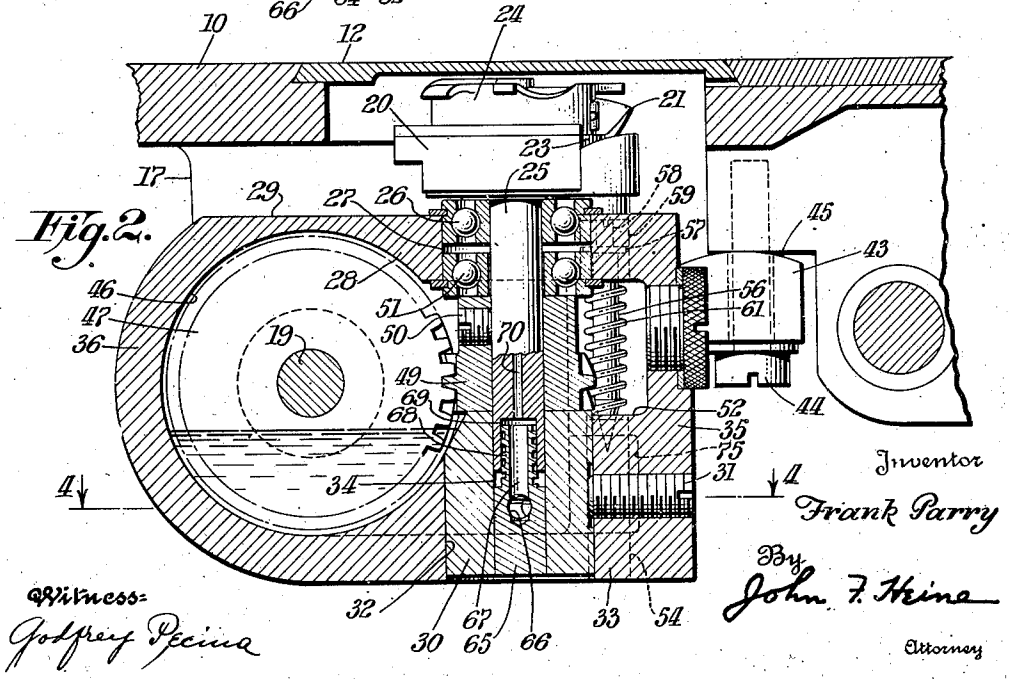


Fig. 2.



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LUBRICATING DEVICES FOR SEWING MACHINE LOOP-TAKERS

Filed Dec. 21, 1943 2 Sheets-Sheet 2

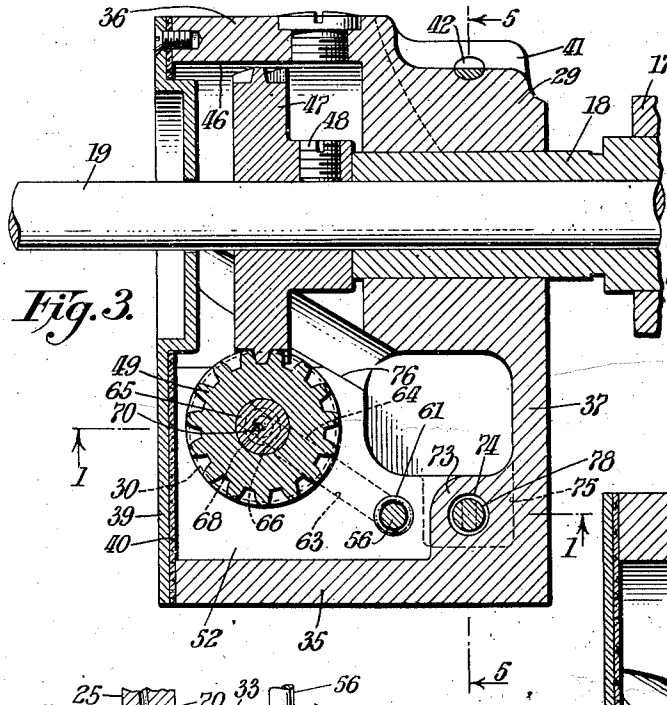

Fig. 3.

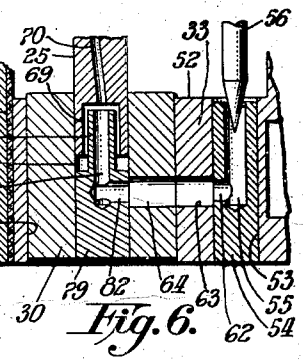

Fig. 6.

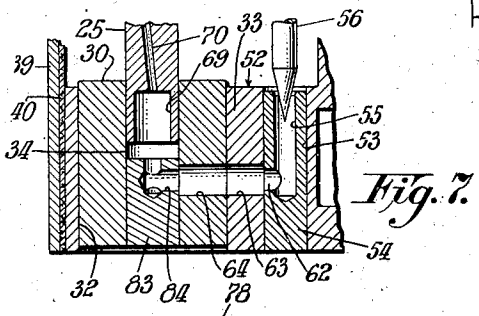

Fig. 7.

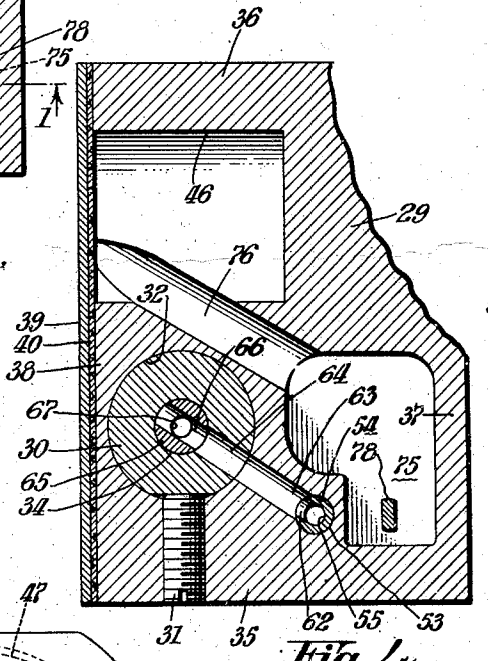

Fig. 4.

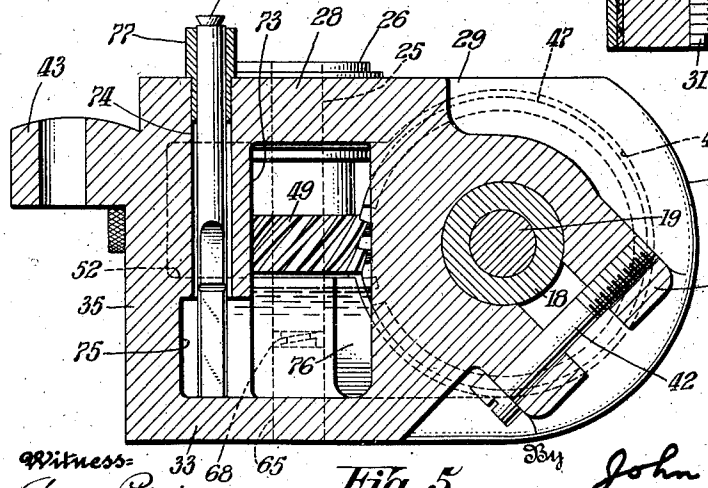

Fig. 5.

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UNITED STATES PATENT OFFICE

2,383,152

LUBRICATING DEVICE FOR SEWING MACHINE LOOP-TAKERS

Frank Parry, Bridgeport, Conn., assignor to The Singer Manufacturing Company, Elizabeth, N. J., a corporation of New Jersey

Application December 21, 1943, Serial No. 515,083

17 Claims. (Cl. 112—256)

This invention relates to loop-taker mechanisms of sewing machines and, more particularly, to sewing machine loop-takers of the vertical-axis rotary hook type, and has for an object to provide improved means for automatically delivering lubricant in controlled quantity to the thread-carrier raceway of a vertical-axis rotary hook from a substantial supply of lubricant.

A further object of the invention is to supply a properly controlled quantity of lubricant, promptly upon initiation of the operation of the sewing machine, to the raceway of a vertical-axis rotary hook from a supply of lubricant contained in a hook-mechanism casing, whereby the hook raceway is effectively lubricated during successive and short duration operation periods of the machine and is, nevertheless, free from flooding conditions.

Other and more specific objects of the invention will be apparent from the following description and claims.

The present invention is in the nature of a further improvement in the rotary-hook raceway lubricating devices of my U. S. Patent No. 2,334,644, Nov. 16, 1943, and my pending U. S. Patent Application Serial No. 457,148 filed Sept. 3, 1942; certain features of the two prior constructions being modified and combined in a novel manner to attain the objects in view.

The invention comprises the devices, combinations and arrangements of parts hereinafter described in connection with the accompanying drawings, which illustrate a preferred embodiment of the invention and in which;

Fig. 1 is a front side elevation, partly in vertical section, of a portion of a sewing machine containing the present improvement; the section of the loop-taker bracket being taken substantially on the line 1—1 of Fig. 3. Fig. 2 represents a transverse section of the bed-plate taken in substantially the vertical plane containing the axis of rotation of the loop-taker. Fig. 3 represents a section of the loop-taker bracket taken in substantially the horizontal plane containing the axis of rotation of the loop-taker actuating shaft. Fig. 4 represents a fragmentary horizontal section of the loop-taker bracket taken below that of Fig. 3 and on substantially the line 4—4 of Fig. 2. Fig. 5 represents a vertical section taken transversely of the loop-taker bracket on substantially the line 5—5 of Fig. 3. Figs. 6 and 7 represent fragmentary views of the loop-taker bracket in vertical sections similar to Fig. 1 and showing two different modifications of the outlet leg of the stationary lubricant conduit provided in said bracket.

The sewing machine in part illustrated in the drawings has a frame including a work-supporting bed-plate 10 provided with left and right slide plates 11 and 12 disposed at opposite sides of a throat-plate 13 suitably secured upon the bed-plate 10. Operating through the throat-plate 13 is an endwise vertically reciprocatory thread-carrying needle 14 which may be actuated in any usual or suitable manner. The work is advanced across the bed-plate by a feed-dog 15 opposed in its work-engaging movements by a conventionally spring-depressed presser-foot 16.

Depending from the bed-plate 10 is a frame-lug 17 in which is secured a horizontally apertured bearing-bushing 18. Rotatably journaled in the bushing 18 and extending lengthwise of the bed-plate 10 is a horizontally disposed bed-shaft 19 which is rotated once for each complete reciprocation of the needle 14. The bed-shaft 19 functions to actuate the loop-taker and the work-feeding mechanism of the machine.

Complemental to the needle 14 in the formation of lock-stitches is a rotary loop-taker 20 of the vertical-axis rotary hook type and having a cup-shaped body provided in the cylindrical side wall thereof with a thread-loop seizing beak 21. The cylindrical side wall of the rotary hook is internally provided with an annular raceway 22; and journaled in said raceway 22 is the peripheral bearing rib 23 of a thread-carrier 24 about which the needle-thread loops are cast by the rotary hook. The thread-carrier 24 is restrained against rotation with the rotary hook in any usual or suitable manner.

Extending downwardly centrally from the bottom wall of the rotary hook 20, and preferably integral therewith, is a vertically disposed hook-shaft 25. At its upper end, the hook-shaft 25 is journaled in a ball-bearing 26 disposed in a vertical opening 27 provided in the substantially horizontal top wall 28 of a loop-taker bracket or hook-handle 29. At its lower end, the hook-shaft 25 is journaled in a vertically apertured member in the form of a bushing 30 secured by a screw 31 in an opening 32 provided in the bottom wall 33 of the hook-saddle 29. The hook-shaft 25 terminates at its lower end within the bushing-aperture 34 in which the shaft 25 is journaled, whereby the lower end of the hook-shaft 25 is spaced a substantial distance from the lower end of the bushing-aperture 34.

The hook-saddle 29 comprises a chambered and generally rectangular casing having integral walls including the vertically spaced top wall 28 and bottom wall 33 above referred to, a front wall 35 and an opposed curved rear wall 36, a right hand end wall 37 and a left hand end wall 38. The left end wall 38 is partly cut away and is closed by a detachable cover-plate

39 sealed by a suitable gasket 40. A portion of the rear wall 36 of the hook-saddle 29 is formed to provide a split lug 41 which is adjustably clamped by a screw 42 upon the bearing-bushing 18. Extending from the front wall 35 of the hook-saddle is a foot 43 secured by a screw 44 to a shouldered lug 45 depending from the bed-plate 10.

The rearward portion of the hook-saddle 29, adjacent the split-lug 41, is internally recessed to provide a cylindrically segmental cavity 46 affording clearance for a driving spiral-gear 47 secured by a screw 48 upon the bed-shaft 19 adjacent one end of the bearing-bushing 18. The spiral-gear 47 is in driving engagement with a driven spiral-gear 49 secured by screws 50 upon the hook-shaft 25; the ratio of the gears 47 and 49 being such that the hook-shaft 25 is rotated twice for each rotation of the bed-shaft 19. The driven spiral-gear 49 is disposed between the top and bottom walls 28 and 33 of the hook-saddle, and the upper end of said gear 49 engages the inner race-ring of a ball-thrust-bearing 51 disposed in the top-wall opening 27 below and in spaced relation to the ball-bearing 26. The ball-thrust-bearing 51 is preferably spaced slightly from the hook-shaft 25 and functions to absorb any upward thrust transmitted to the hook-shaft 25 by the intermeshing spiral gears 47 and 49.

The forward portion of the bottom wall 33 of the hook-saddle is of substantial thickness, whereby the upper face of the thickened wall-portion forms a horizontal ledge 52 disposed a substantial distance above the level of the bottom portion of the gear-cavity 46. The ledge 52 portion of the bottom wall 33 extends lengthwise of the front wall 35 of the hook-saddle and contains the opening 32 in which the bushing 30 is secured. The ledge 52 portion of the bottom wall 33 also contains a vertical aperture 53 in which is fixedly disposed a valve-plug 54 having the upper end thereof preferably disposed slightly below the level of the upper face of the ledge 52. The valve-plug 54 has an upwardly open axial bore 55 of which the lower end terminates within the length of the valve-plug.

The valve-plug 54 is adjustably entered at its upper end by the pointed lower end of a vertically disposed valve-rod 56. The upper portion of the valve-rod 56 is formed to provide a flange 57 and a reduced upper end 58 which freely enters a suitably apertured adjusting nut 59 threaded into an opening 60 provided in the hook-saddle top-wall 28. A coil-spring 61 surrounds the valve-rod 56 and is interposed between the upper end of the valve-plug 54 and the valve-rod flange 57. The described valve-rod construction permits the lower end of the valve-rod to center itself in the valve-plug 54. By adjusting the nut 59 in the wall-opening 60, the size of the opening at the upper end of the valve-plug bore 55 may be conveniently regulated and, particularly, as the nut 59 is accessible from above the bed-plate 10. If desired, the upper end of the bore 55 may be closed by the valve-rod 56.

The valve-plug 54 has a radial aperture 62, connecting the lower end of the valve-plug bore 55 to a horizontal duct 63 formed in the bottom-wall 33 of the hook-saddle; said duct 63 being horizontally inclined rearwardly to extend toward the rotation-axis of the hook-shaft 25. Connecting the wall-duct 63 with the bushing-opening 32 is a duct 64 provided in the bushing 30 and alined with the wall-duct 63.

Tightly fitting and fixedly disposed in the lower portion of the bushing-opening 34 is a cylindrical plug 65 having a diametral aperture 66 alined with the bushing-duct 64 and also having an upwardly open axial bore 67 extending upwardly from the aperture 66. The plug 65 seals the bushing-opening 34 against delivery of oil into said opening 34 through the bushing-duct 64 excepting by way of the plug-bore 67. Above the bushing-duct 66, the plug 65 is reduced to provide an externally spirally threaded stem 68. The stem 68 extends upwardly into an axial opening or bore 69 formed in the lower end and extending longitudinally of the hook-shaft 25; said stem 68 closely fitting the side wall and being preferably slightly spaced from the end wall of the shaft-bore 69. The upper end of the stem 68 is preferably disposed slightly below the level of the ledge 52.

The hook-shaft 25 is longitudinally provided with an inclined duct 70, of which the lower or intake end is connected with the relatively large shaft-bore 69 preferably axially of the shaft. The upper end of the duct 70 terminates in the bottom wall of the rotary hook 20 and is eccentric to the rotation-axis of the hook-shaft 25. Connected with the upper end of the inclined shaft-duct 70 is a horizontally radial and preferably wick-filled aperture 71 provided in the bottom wall of the rotary hook 20. At its outer end, the radial aperture 71 terminates within the hook-body and is connected by a wick-filled duct 72 in the side wall of the rotary hook to the hook-raceway 22. The bore 67 of the stem 68 is preferably in vertical alinement with the lower or intake end of the shaft-duct 70 and the lower or intake end of the shaft-duct 70 is preferably disposed slightly below the level of the ledge 52.

The hook-saddle 29 has an internal corner-lug 73 at the juncture of the front wall 35 and the right hand end wall 37; said corner-lug 73 extending downwardly from the top wall 28 to the ledge 52. The corner-lug 73 of the hook-saddle is provided with a vertical filling aperture 74 terminating at its lower end in an angular cavity 75 formed in the wall of the ledge 52. The cavity 75 is connected by a passageway 76 in the bottom wall of the hook-saddle with the driving-gear cavity 46. The cavities 46 and 75, together with their connecting passageway 76, form a lubricant-reservoir adapted to hold a substantial quantity of lubricant. As indicated, for example in Fig. 2 of the drawings, the level of the lubricant when the machine is out of operation is lower than the ledge 52, whereby the lubricant is free to drain from said ledge.

The upper end of the filling aperture 74 is entered by an externally shouldered and vertically apertured bushing 77 which provides a support for the upper end of a conventional oil-level test-rod 78 resting upon the bottom wall 33 of the hook-saddle in the reservoir cavity 75.

It will be understood, from the foregoing description, that the connected oil-ducts 55, 62, 63, 64, 66 and 67 together comprise a constant level auxiliary reservoir in the form of a stationary U-shaped lubricant-conduit having vertically disposed and upwardly open legs of unequal lengths. The longer or intake leg 55 of this conduit has the upper end thereof disposed slightly above the level of the lower or intake end of the inclined shaft-duct 70 and above the level of the upper end of the shorter or lubricant-outlet leg 67 provided by the bore of the plug-stem 68 which is disposed below the intake end of the shaft-duct 70. The shaft-bore 69 provides lubricant-con-

ducting connections between the conduit outlet leg **67** and the intake end of the shaft-duct **70**.

The spriral driving-gear **47** for rotating the hook is disposed to dip into the supply of lubricant contained in the reservoir-cavity **46**. Upon initiating rotation of the loop-taker **20**, a portion of the oil picked up by the rotating driving-gear **47** will be deposited upon the ledge **52** and will, therefore, be automatically supplied to the intake leg **55** of the stationary lubricant-conduit in a valve-open position of the valve-rod **56**. The quantity of oil permitted to enter the conduit intake-leg **55** may be controlled by endwise adjustment of the valve-rod **56**. The oil entering the conduit-leg **55** is conducted into the outlet-leg **67** and in seeking the level of the ledge **52**, will spill from the upper end of said outlet-leg **67**. The rotating cylindrical wall of the shaft-bore **67** coacts with the spiral thread of the plug-stem **68** in preventing downward seepage of oil externally of the stem and, consequently, the oil is caused to rise slightly above the level of the intake end of the shaft-duct **70**. The vertically inclined duct **70** functions as a centrifugal pump in quickly elevating oil, delivered into the lower intake end thereof, to the hook-duct **71** for delivery to the hook-raceway **22**.

Upon discontinuing rotation of the loop-taker **20**, the driving-gear **47** ceases to supply oil to the ledge **52** and the excess oil will drain from said ledge into the lubricant-reservoir. However, the conduit-legs **55** and **67** will retain columns of oil equal substantially to the height of the outlet-leg **67**. A small quantity of oil will seep downwardly along the thread of the plug-stem **68** when the shaft **25** stops rotating, thereby loading the stem-thread. Upon subsequent rotation of the stem, the oil held by the stem-thread is promptly pumped up into the shaft-duct **70**, thereby in effect priming the centrifugal pump **70** and insuring early delivery of oil to the raceway **22** of the loop-taker. Inasmuch as the outlet-leg **67** of the conduit is full of lubricant when rotation of the loop-taker **20** is initiated, and as oil will be promptly supplied to the intake-leg **55** upon initiating rotation of the driving-gear **47**, the above described initial priming of the pump will be promptly followed by continued delivery of oil into the lower end of the shaft-duct **70** in the controlled quantity predetermined by the setting of the valve-rod **56**.

In the slightly modified form of construction illustrated in Fig. 6 of the drawings, the stationary U-shaped lubricant-conduit has the outlet-leg provided in a cylindrical plug **79** which differs from the plug **65** primarily in omitting the external thread of the plug-stem **68**.

The modified plug **79** is tightly fitted into the lower portion of the bushing opening **34**, both above and below the bushing-duct **64**, and has the upper portion reduced diametrically to form a stem **80** which extends upwardly into the shaft-bore **69** into proximity to the end wall of the shaft-bore **69**. The plug **79** has an upwardly open axial bore **81** connected at its lower end by a radial plug-aperture **82** with the bushing-duct **64**. Like the plug **65**, the plug **79** seals the bushing-opening **34** against delivery of oil into said opening **34** through the bushing-duct **64** excepting by way of the plug-bore **81**.

The oil supplied to the intake duct **55** of the U-shaped conduit spills from the upper end of the plug-bore **81** and rises in the shaft-bore **69** in seeking the level of the ledge **52**. The oil thus supplied to the shaft-bore **69** enters the intake opening of the shaft-duct **70** and, upon rotation of the shaft **25**, is quickly carried upwardly through the inclined duct for delivery to the hook-raceway **22**.

In a further modification, illustrated in Fig. 7 of the drawings, a plug **83** is tightly fitted into the bushing-opening **34** and differs from the plug **79** of Fig. 6 in omitting the reduced stem portion and in being disposed entirely below the shaft **25**. The plug **83** has an L-shaped oil-duct **84**, of which one branch is in alinement with the bushing-duct **64**; the other branch of the duct **84** being in vertical alinement with the intake opening of the shaft-duct **70**. The vertical branch of the L-shaped duct **84** comprises the short leg of a stationary U-shaped conduit. Oil supplied through said conduit, in predetermined quantity, is delivered by the plug **83** axially of the shaft **25** and rises in the shaft-bore **69** until the oil enters the intake end of the inclined shaft-duct **70** for delivery to the hook raceway **22**.

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

1. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and longitudinally provided with a lubricant-duct having its lower end forming a lubricant-intake opening, said lubricant-duct being upwardly inclined away from the rotation axis of said shaft, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary lubricant-conduit having lubricant conducting connections with the intake opening of said lubricant-duct of the shaft, said stationary conduit having an intake opening disposed above the level of the intake end of said lubricant-duct of the shaft and above the level of the supply of lubricant in said reservoir cavity, and means automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir-cavity into the intake opening of said stationary conduit.

2. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and longitudinally provided with a lubricant-duct having its lower end forming a lubricant-intake opening, said lubricant-duct being upwardly inclined away from the rotation axis of said shaft, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary lubricant-conduit having lubricant conducting connections with the intake opening of said lubricant-duct of the shaft, said stationary conduit having an intake opening disposed above the level of the intake end of said lubricant-duct of the shaft and above the level of the supply of lubricant in said reservoir cavity, means automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir-cavity into the intake opening of said stationary conduit, and manually regulatable valve-means associated with said stationary conduit for controlling the quantity of lubricant delivered through said conduit.

3. A loop-taker mechanism for sewing ma-

chines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and longitudinally provided with a lubricant-duct having its lower end forming a lubricant-intake opening, said lubricant-duct being upwardly inclined away from the rotation axis of said shaft, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary U-shaped lubricant-conduit providing upwardly open lubricant-intake and lubricant-outlet legs, said lubricant-intake leg having its open upper end disposed above the level of the supply of lubricant in said reservoir cavity and above the level of said intake end of the lubricant duct of said shaft, and said lubricant-outlet leg being disposed below the level of and having lubricant-conducting connections with the intake opening of said lubricant-duct of the shaft, and means automatically rendered effective initiating upon rotation of said loop-taker for supplying lubricant from said reservoir cavity to the intake-leg of said stationary conduit.

4. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and longitudinally provided with a lubricant-duct having its lower end forming a lubricant-intake opening, said lubricant-duct being upwardly inclined away from the rotation axis of said shaft, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary U-shaped lubricant-conduit providing upwardly open lubricant-intake and lubricant-outlet legs, said lubricant-intake leg having its open upper end disposed above the level of the supply of lubricant in said reservoir cavity and above the level of said intake end of the lubricant-duct of said shaft, and said lubricant-outlet leg having lubricant-conducting connections with the intake opening of said lubricant-duct of the shaft, means automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir cavity to the intake-leg of said stationary conduit, and manually regulatable valve-means associated with the upper end of said lubricant-intake leg of the stationary conduit for controlling the quantity of lubricant delivered through said conduit.

5. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and provided in its lower end with a downwardly open bore, said shaft being longitudinally provided with a vertically inclined lubricant-duct restricted with respect to and leading upwardly from said bore, a loop-taker carried by the upper end of said shaft for rotation therewith and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary U-shaped lubricant-conduit connected with said bore of the shaft and providing upwardly open lubricant-intake and lubricant-outlet legs, said lubricant-intake leg having its open upper end disposed above the level of the supply of lubricant in said reservoir-cavity and above the level of the upper wall of said bore of the shaft, and said outlet leg being disposed substantially in vertical alinement with the longitudinal axis of said bore of the shaft, means automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir cavity to the intake leg of said stationary conduit, and manually regulatable means for controlling the quantity of lubricant supplied through said stationary conduit.

6. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and provided in its lower end with a downwardly open bore, said shaft being longitudinally provided with a vertically inclined lubricant-duct restricted with respect to and leading upwardly from said bore, a loop-taker carried by the upper end of said shaft for rotation therewith and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary U-shaped lubricant-conduit connected with said bore of the shaft and providing upwardly open lubricant-intake and lubricant-outlet legs, said lubricant-intake leg having its open upper end disposed above the level of the supply of lubricant in said reservoir-cavity and above the level of the upper wall of said bore of the shaft, and said outlet leg including a tubular stem extending upwardly into said bore of the shaft, means automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir cavity to the intake leg of said stationary conduit, and manually regulatable means for controlling the quantity of lubricant supplied through said stationary conduit.

7. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and provided in its lower end with a downwardly open bore, said shaft being longitudinally provided with a vertically inclined lubricant-duct restricted with respect to and leading upwardly from said bore, a loop-taker carried by the upper end of said shaft for rotation therewith and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary U-shaped lubricant-conduit connected with said bore of the shaft and providing upwardly open lubricant-intake and lubricant-outlet legs, said lubricant-intake leg having its open upper end disposed above the level of the supply of lubricant in said reservoir-cavity and above the level of the lower end of the lubricant-duct of the shaft, and said outlet leg including an externally threaded tubular stem extending upwardly into said bore of the shaft in close proximity to the side wall of said bore, means automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir cavity to the intake leg of said stationary conduit, and manually regulatable means for controlling the quantity of lubricant supplied through said stationary conduit.

8. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis rotary shaft journaled in said casing and having at its lower end a downwardly open longitudinal bore, said shaft being longitudinally provided with a vertically inclined lubricant-duct restrict-

ed relatively to and extending upwardly from said bore, a loop-taker carried by the upper end of said shaft for rotation therewith and having a thread-carrier raceway, a thread-carrier journaled in said raceway and restrained against rotation with said loop-taker, a lubricant-collecting ledge disposed in the chamber of said casing above the levels of the bottom wall of said lubricant reservoir cavity and the lower end of the lubricant-duct of said shaft, a stationary tubular stem extending upwardly into said bore of the shaft and terminating at its upper end below the level of the lower end of said lubricant-duct, means disposed in said casing and automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir to said ledge, lubricant-conducting means connecting said ledge and the bore of said tubular stem, and lubricant-conducting connections between the upper end of said lubricant-duct of the shaft and said raceway of the loop-taker.

9. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis rotary shaft journaled in said casing and having at its lower end a downwardly open longitudinal bore, said shaft being longitudinally provided with a vertically inclined lubricant-duct restricted relatively to and extending upwardly from said bore, a loop-taker carried by the upper end of said shaft for rotation therewith and having a thread-carrier raceway, a thread-carrier journaled in said raceway and restrained against rotation with said loop-taker, a lubricant-collecting ledge disposed in the chamber of said casing above the level of the bottom wall of said lubricant-reservoir cavity and above the lower end of the lubricant-duct of said shaft, a vertically disposed and externally threaded stationary stem extending upwardly into said bore of the shaft in close proximity to the side wall of said bore, said stem having an upwardly open longitudinal bore and having its upper end disposed below the level of said ledge, means disposed in said casing and automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir to said ledge, lubricant-conducting means connecting said ledge and the bore of said tubular stem, and lubricant-conducting connections between the upper end of said lubricant-duct of the shaft and said raceway of the loop-taker.

10. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a horizontally disposed rotary actuating shaft extending into said casing, a driving gear carried by said shaft adapted to dip into a supply of lubricant contained in said cavity, a vertical-axis loop-taker shaft journaled in said casing and provided at its lower end with an axial cylindrical opening, said loop-taker shaft being longitudinally provided with a lubricant-duct extending upwardly from said axial opening at an inclination away from the rotation-axis of said shaft, a driven gear carried by said loop-taker shaft and engaged by said driving gear, a loop-taker carried by the upper end of the vertically disposed shaft for rotation therewith and having a thread-carrier raceway, a thread-carrier journaled in said raceway and restrained against rotation with said loop-taker, lubricant-conduct means connecting said lubricant-duct of the loop-taker shaft and said raceway, a casing-wall providing a lubricant-collecting ledge in the chamber of said casing, said wall having an opening terminating in said ledge, a valve-plug disposed in the opening of said wall and having an upwardly open lubricant-duct, a valve-rod supported by said casing for endwise adjustment and entering the upper end of the lubricant-duct of said valve plug, a stationary stem extending upwardly into said axial opening of the loop-taker shaft and terminating below the level of said ledge, said stem being longitudinally provided with an upwardly open bore, and lubricant-conducting connections the lubricant-duct of said valve-plug and the bore of said stem.

11. A loop-taker mechanism for sewing machines, comprising, a chambered casing having a lubricant-reservoir cavity and a bottom wall portion providing in the chamber of the casing a horizontally disposed lubricant-collecting ledge disposed above the level of the bottom wall of said lubricant-reservoir cavity, a horizontally disposed rotary actuating shaft extending into said casing, a driving gear carried by said shaft adapted to dip into a supply of lubricant contained in said cavity, a vertically disposed loop-taken shaft provided at its lower end with a cylindrical opening, said loop-taker shaft being longitudinally provided with a lubricant-duct extending upwardly from said opening at an inclination away from the rotation-axis of said shaft, bearings for said shaft including a vertically apertured bearing-bushing disposed in the bottom wall of said casing, a driven gear secured upon said shaft intermediate the ends thereof and engaged by said driving gear for rotating said loop-taker shaft, a loop-taker carried by the upper end of the vertically disposed shaft and having a thread-carrier raceway, a thread-carrier journaled in said raceway and restrained against rotation with said loop-taker, lubricant-conduit means connecting said lubricant-duct of the loop-taker shaft and said raceway, a plug carried by said bearing-bushing and having a reduced stem portion extending upwardly into said opening of the loop-taker shaft, said stem being longitudinally provided with an upwardly open bore and terminating at its upper end below the level of said lubricant-collecting ledge, a valve-opening in said ledge, a manually adjustable valve-member complemental to said valve-opening in regulating the quantity of lubricant entering said valve-opening, and lubricant-conduit connections between said valve-opening and the bore of said stem.

12. A loop-taker mechanism for sewing machines, comprising, a chambered casing having a primary lubricant-reservoir cavity and a thickened bottom wall portion providing in the chamber of the casing a raised lubricant-collecting ledge, said bottom wall having a valve-regulated lubricant duct terminating in said ledge, and said bottom wall being provided with an auxiliary reservoir cavity having lubricant-conducting connections with said primary reservoir cavity, a horizontally disposed rotary actuating shaft extending into said casing, a driving gear carried by said shaft adapted to dip into a supply of lubricant contained in said primary reservoir cavity, a vertical-axis rotary loop-taker shaft journaled in said casing and provided at its lower end with a cylindrical opening, said loop-taker shaft being longitudinally provided with a lubricant-duct extending upwardly from said opening at an inclination away from the rotation-axis of said shaft, a driven gear carried by said shaft and engaged by said driving gear, a loop-taker

carried by the upper end of said shaft and provided with a thread-carrier raceway having lubricant-conducting connections with the lubricant-duct of said loop-taker shaft, a thread-carrier journaled in said raceway and restrained against rotation with said loop-taker, a vertically disposed and externally threaded stem extending upwardly into said cylindrical opening of the loop-taker shaft in close proximity to the side wall of said cylindrical opening, said stem having an upwardly open lubricant-conducting bore, lubricant-conduit means connecting said valve-regulated duct of the casing bottom wall with the bore of said stem, and an oil-level test-rod removably disposed in a wall of said casing and extending into said auxiliary reservoir cavity in the casing bottom wall.

13. A loop-taker mechanism for sewing machines, comprising, a chambered casing providing a lubricant-reservoir cavity, a vertical-axis shaft rotatably journaled in said casing and longitudinally provided with a vertically inclined lubricant-duct having its lower end forming a lubricant-intake opening, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, lubricant-conducting connections between the upper end of said lubricant-duct of the rotary shaft and said raceway, a stationary U-shaped lubricant-conduit providing upwardly open lubricant-intake and lubricant-outlet legs, said lubricant-intake leg of the stationary conduit having its open upper end disposed above the level of the supply of lubricant in said reservoir cavity and above the level of said intake end of the lubricant-duct of said shaft, and said lubricant-outlet leg having its upper end disposed below and in substantial vertical alinement with said intake end of the lubricant-duct of said shaft, means automatically rendered effective upon initiating rotation of said loop-taker for supplying lubricant from said reservoir cavity to the intake-leg of said stationary conduit, and manually regulatable means for controlling the quantity of lubricant delivered through said conduit.

14. A sewing machine having, in combination, a work-support, a bracket disposed below said work-support, a vertical shaft rotatably journaled in said bracket and provided with centrifugally acting means for elevating oil lengthwise of said shaft, a loop-taker carried by the upper end of said shaft and provided with a thread-carrier race-way, said loop-taker being provided with means for delivering oil from said shaft to said raceway, a main oil-reservoir disposed below said loop-taker, an auxiliary oil-reservoir disposed between said main reservoir and said shaft, said auxiliary oil-reservoir having an intake opening above the level of the supply of oil in the main reservoir and having oil-conducting connections with the lower end of said shaft, and means automatically rendered effective upon rotation of said shaft for supplying oil from said main reservoir to the intake opening of said auxiliary reservoir and for maintaining the oil in the auxiliary reservoir at a constant level, whereby oil is delivered to the lower end of the shaft at a constant head independently of the depth of oil in the main reservoir.

15. A sewing machine having, in combination, a work-support, a bracket disposed below said work-support, a vertical-axis shaft rotatably journaled in said bracket and longitudinally provided with a lubricant-duct having an intake-opening at the lower end of the shaft, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, said loop-taker being provided with means for delivering lubricant from the upper end of said lubricant-duct to said raceway, a member apertured to surround the intake-opening portion of said shaft, a lubricant-reservoir, a constant level oil-collecting ledge connected with and disposed above the level of the supply of lubricant in said reservoir, said ledge being disposed below the level of said loop-taker and above the level of the intake-opening end of said shaft, means automatically rendered effective upon rotation of said shaft for supplying lubricant from said lubricant reservoir to said ledge, and a lubricant-conduit connection between said ledge and the aperture of said member.

16. A loop-taker mechanism for sewing machines, comprising, a chambered casing forming a lubricant-reservoir cavity, a bushing secured in said casing and vertically provided with a bearing-opening, a vertical-axis shaft rotatably journaled in the bearing-opening of said bushing, said shaft being longitudinally provided with a lubricant-duct having an intake opening at the lower end of the shaft, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, said loop-taker being provided with means for delivering lubricant from the upper end of said lubricant-duct of the shaft to said raceway, a stationary lubricant-conduit connected with said bearing-opening of the bushing below said shaft and having its lubricant intake end disposed above the level of a supply of lubricant in said reservoir and above the level of the intake opening of the shaft lubricant-duct, and means dipping into the supply of lubricant in said cavity and automatically rendered effective upon rotation of said shaft for supplying lubricant from said lubricant-reservoir of the casing into the intake opening of said stationary lubricant-conduit.

17. A loop-taker mechanism for sewing machines, comprising, a chambered casing forming a lubricant-reservoir cavity, a bushing secured in said casing and vertically provided with a bearing-opening, a vertical-axis shaft rotatably journaled in the bearing-opening of said bushing, said shaft being longitudinally provided with a lubricant-duct having an intake opening at the lower end of the shaft, a loop-taker carried by the upper end of said shaft and having a thread-carrier raceway, said loop-taker being provided with means for delivering lubricant from the upper end of said lubricant-duct of the shaft to said raceway, a lubricant-collecting ledge connected with the lubricant-reservoir cavity of said casing and disposed above the level of the supply of lubricant in said cavity, a lubricant-conduit leading from said ledge and terminating in said bearing-opening of the bushing below said intake opening of the shaft, and means dipping into the supply of lubricant in said cavity and automatically rendered effective upon rotation of said shaft for supplying lubricant to said ledge.

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