Oct. 20, 1942. N. F. TOWNSEND ET AL 2,299,439

LUBRICATING MECHANISM FOR SEWING MACHINES

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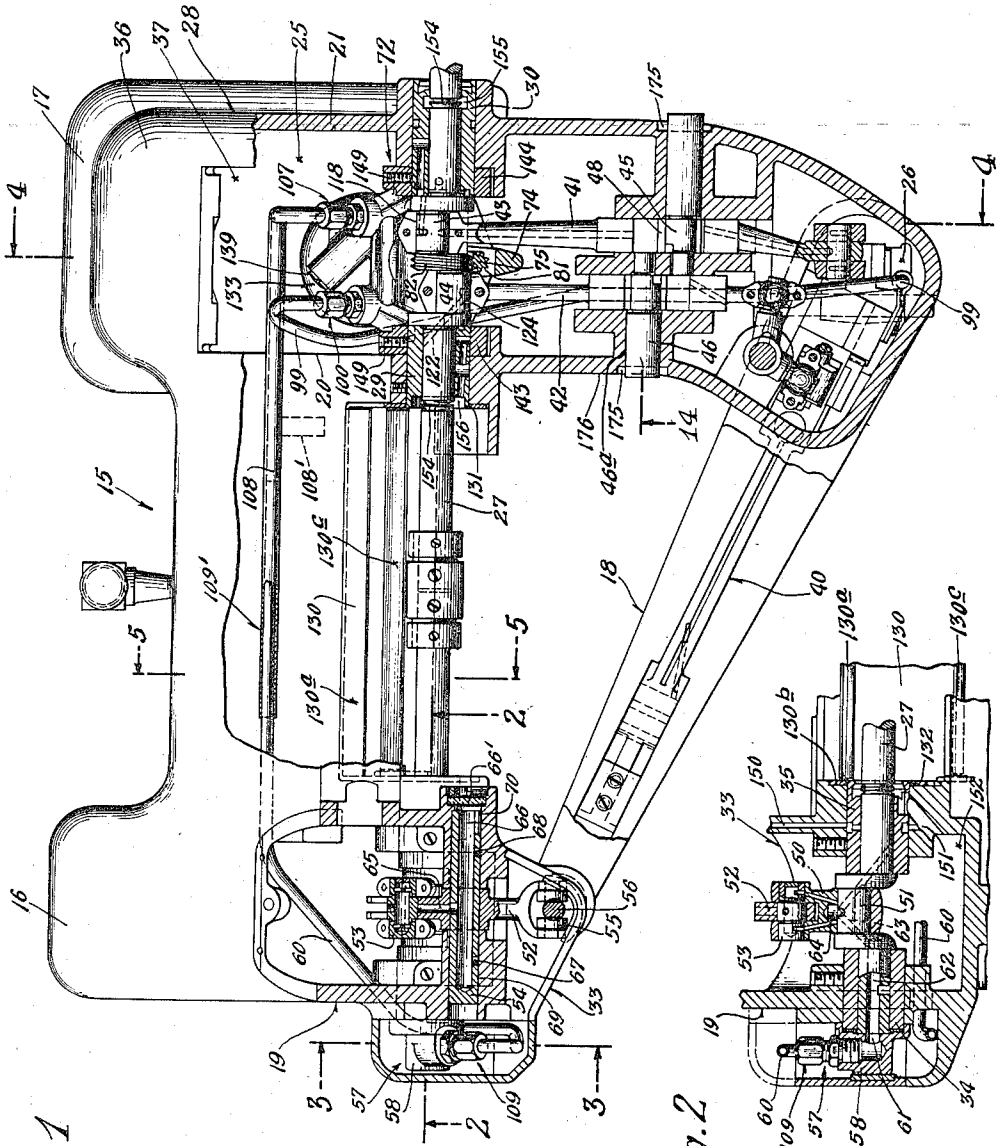


Fig. 1

Fig. 2

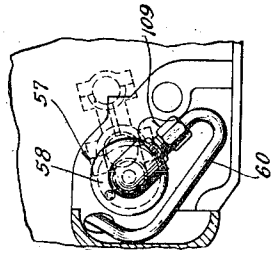


Fig. 3

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Fig. 4

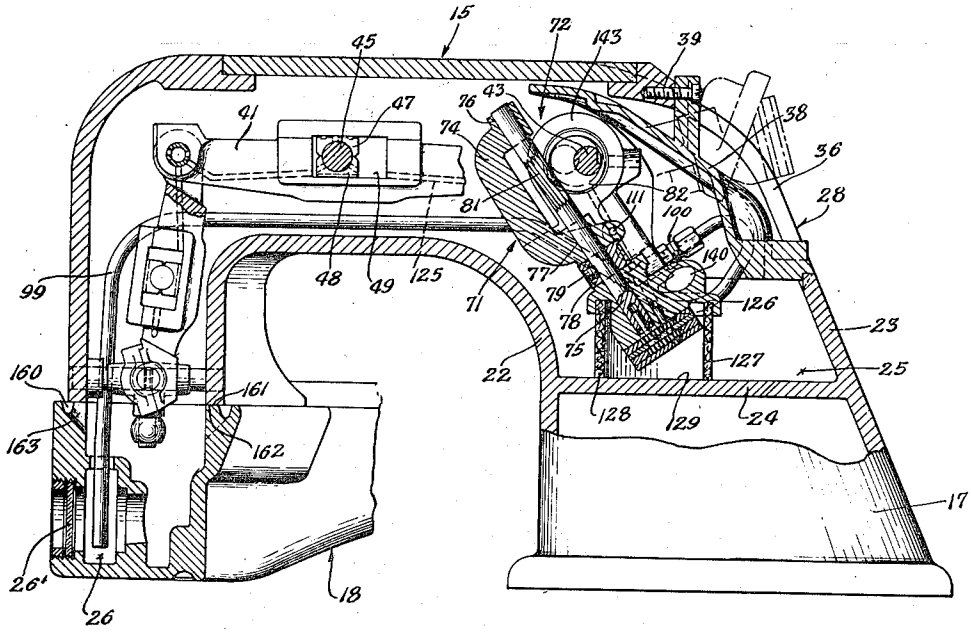


Fig. 11

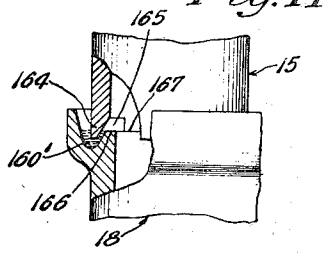


Fig. 14

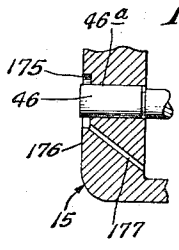


Fig. 5

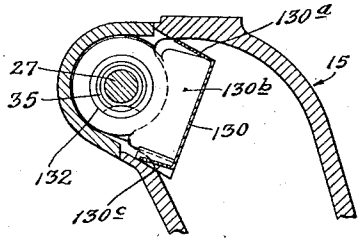
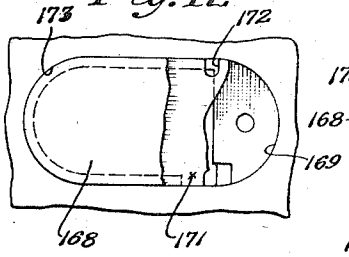


Fig. 12



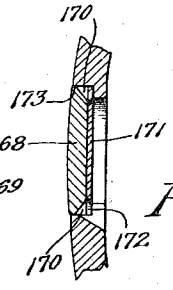


Fig. 13

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LUBRICATING MECHANISM FOR SEWING MACHINES

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Fig. 6

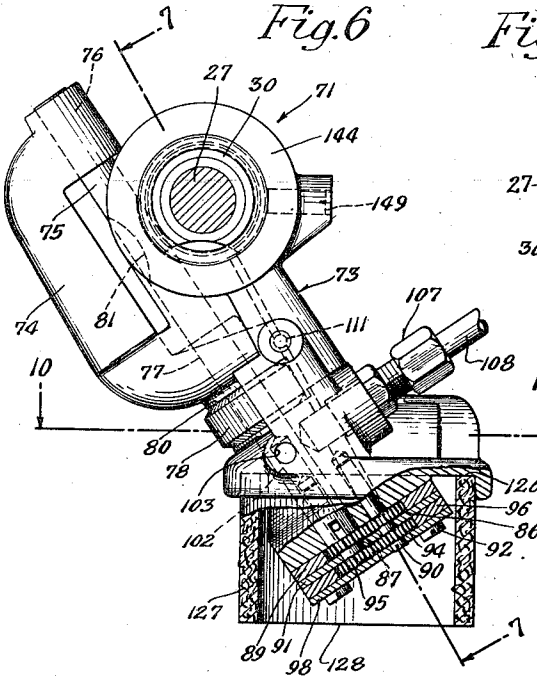


Fig. 7

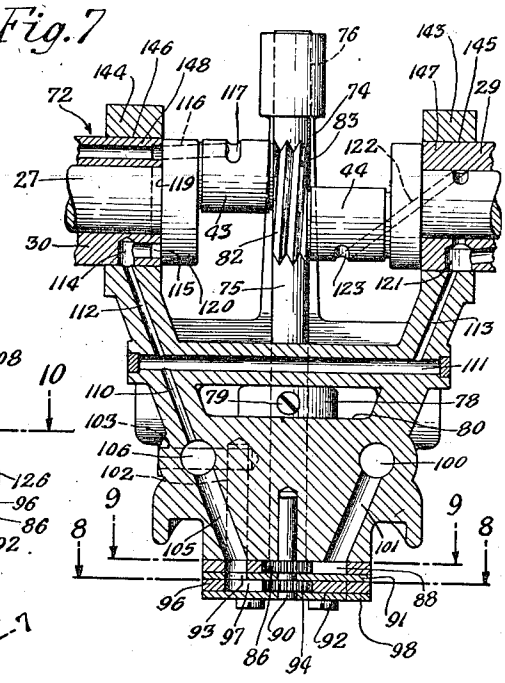


Fig. 15

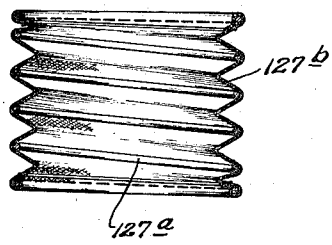


Fig. 8

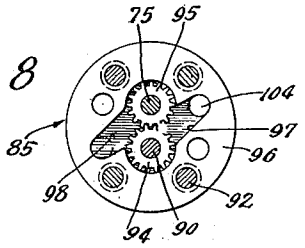


Fig. 9

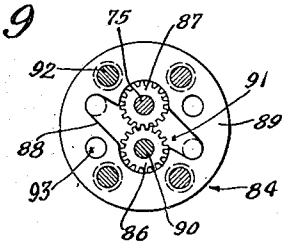
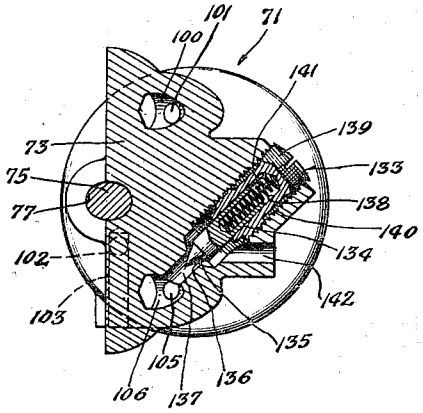


Fig. 10



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UNITED STATES PATENT OFFICE

2,299,439

LUBRICATING MECHANISM FOR SEWING MACHINES

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Application December 15, 1939, Serial No. 309,362

25 Claims. (Cl. 184—6)

The present invention relates to sewing machines, and particularly to lubricating mechanisms therefor. In recent years there has been a considerable speeding-up of sewing in the needle industries; and, as a result thereof frequent breakdowns occur when the sewing machines are not lubricated adequately.

It is an important object of the present invention to provide mechanism which will insure a thorough and adequate lubrication to the various high-speed moving parts of sewing machines.

It is another object of the present invention to provide a highly efficient lubricating mechanism for sewing machines which will be simple and economical to construct.

It is a most important object of the present invention to provide lubricating mechanism for sewing machines which may be easily manipulated for cleaning, adjustment and repairs.

With these and other important objects in view the present invention has provided a number of novel features, among which the following may be noted:

One feature of the present invention is the provision of oil-pumping mechanism which may be easily swung from an operative concealed position within the frame to a readily accessible exposed position for adjustments and the like at a side opening in the frame, and in which it is possible to do this without separating the driving connection between the pump and the drive shaft.

Another feature is the provision of a simple, direct driving connection between the pump drive shaft and the main drive shaft of the sewing machine.

A further feature is the provision of combination suction and force-feed pumps having a simple and direct connection to the main drive shaft of the sewing machine.

Other important features include: the provision of a novel structure for locating, supporting and transferring a filtering member; a novel structure for conducting oil to various operating mechanisms; the provision of novel oil-collecting and -diverting structures which prevent oil mist, drippings and the like from adversely escaping to the exterior of the sewing machine; a simple and highly efficient driving connection between the main drive and the pump drive shafts; mechanism to intermittently feed oil; an indicator to apprize the operator that the lubricating mechanism is functioning properly; pumping mechanism which can be easily moved out of the storage sump to facilitate cleaning sediment therefrom; and, mechanism for maintaining the driving connections between the pump and main drive shaft in operative association while the pump is in a lowered operative position and in a raised position for repairs and the like.

Other objects, features and advantages will appear hereinafter.

In the drawings:

Figure 1 is a top view, partly in section, of a sewing machine embodying the present invention.

Fig. 2 is a fragmentary sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a side view of the sewing machine shown in Fig. 1 and taken on line 4—4 therein.

Fig. 5 is a fragmentary view taken on line 5—5 of Fig. 1.

Fig. 6 is a detail view of the pump, provided by the present invention, partly in section.

Fig. 7 is a sectional view of the pump taken on line 7—7 of Fig. 6.

Figs. 8 and 9 are sectional views taken on lines 8—8 and 9—9 respectively of Figs. 6 and 7.

Fig. 10 is a fragmentary sectional view of the needle valve taken on line 10—10 of Fig. 6.

Fig. 11 is a fragmentary detail view of lubrication-controlling structure.

Figs. 12 and 13 are detail views of one of the cover plates.

Fig. 14 is a fragmentary sectional view taken on line 14—14 of Fig. 1.

Fig. 15 is a detail view of a modified form of filter.

Before describing the present improvements and mode of operation thereof in detail it should be understood that the invention is not limited to the details of construction and arrangement of parts shown in the accompanying drawings, which are merely illustrative of the present preferred embodiments, and the phraseology employed is for the purpose of description and not of limitation.

For the purpose of illustration, the present invention is shown as applied to a sewing machine of the type disclosed in the Arthur A. Merritt United States Patent 1,041,652, and for a fuller disclosure of the various operating details reference may be had to that patent. The present drawings are intended to include a clear showing of the pump improvements flowing from the present invention and only a sufficient showing of the other operating parts to provide a ready understanding of the invention.

Referring now in detail to the drawings, which embody the present preferred form of the invention, there is disclosed a main frame 15 having bases 16 and 17 adapted to be secured to a bench, table or the like, and including a work arm 18 and an overhanging arm 19. Side walls 20, 21, 22 and 23 together with a transverse wall 24 form an upper sump 25, or reservoir. A collector sump 26 is suitably formed at the lower and inside end of the work or supporting arm 18, as may be seen best in Figs. 1 and 4. A glass 26' is pro-

vided in a side wall of the sump to indicate that the suction pump is properly drawing excess lubricant from the arm which would otherwise cause the lubricant to flood the arm.

A main drive shaft 27 extends through the machine from the driving head 28, where it is supported in suitable bushings 29 and 30 in the walls 20 and 21, respectively, and thence to the working head 33, where it is supported in bushings 34 and 35. The head 28 includes a housing 36 having a side opening 37 with a cover plate 38 secured thereto by screws 39. The supporting arm 18 houses any suitable feeding means 40, such as the one described in considerable detail in the aforementioned Merritt patent, and including crank arms 41 and 42 connected to eccentrics 43 and 44, respectively, on the main drive shaft which are supported upon suitable studs 45 and 46 for reciprocatory and oscillatory movement (e. g., pivotal slide blocks 47 and 48 enveloping stud 45 and in turn slidably entering the elongated chamber 49 of the crank arm 41). The other crank arm 42 is similarly mounted on the stud 46. Succeeding connections from the crank arms 41 and 42 to the feeding mechanism 40 do not form a part of the present invention and are therefore not described in detail.

The working head 19 houses suitable needle-driving instrumentalities which may be of any preferred form (for example, a structure such as described and shown in detail in the aforementioned Merritt patent). As shown, a connecting arm 50 extends from an eccentric 51 on the main drive shaft upwardly to the rear end of a needle-rocker arm 52 to which it is connected by a stud 53. The rocker arm is pivotally mounted upon a suitable shaft 54 and at its forward end is provided with a suitable connection 55 to the needle bar 56.

Lubricant-conducting means 57 (see Figs. 1, 2 and 3) including an end cap 58, enveloping the bushing 34 and outer end of the shaft 27, is adapted to direct lubricant received from a conduit 60 through a duct 61 in the end cap, thence through suitable ducts 62 and 63 of the main drive shaft to a cavity 64 upwardly into a duct 65 of the rocker arm 52 and thence through a channel 66 within the rocker shaft 54 to apertures 67 and 68 in order to lubricate the bearings 69 and 70. A glass 66' is provided in the end of the bearing 70 to show that lubricant is being properly forced up to operating parts remote from the pump 71. Thence, the lubricant is passed through a duct 150 (see Figs. 1 and 2) to bearing 35 and excess is passed through duct 151 to the reservoir 152.

Lubricant pump

Now of particular importance, it should be noted that the present invention provides a very novel form of lubricant pump 71 and supporting structure 72. The lubricant pump includes a main body 73, which is preferably a casting with a yoke 74 supporting a driven member or pump drive shaft 75 in bearings 76 and 77. A collar 78 locked on the shaft 75 by a screw 79 and entering a suitable slot 80 in the pump body 73 holds the shaft in place. The shaft is provided with suitable spiral teeth 81 (see Figs. 1 and 6, particularly) driven by and meshing with a driving member 82 in the form of a spiral 83 on the main drive shaft. Preferably, the latter spiral is made integral with the drive shaft.

In the form shown, the pump 71 includes both force-feed-pumping means 85 to force lubricant from the storage sump to operating mechanisms, and suction-pumping means 84 to draw lubricant from the collector sump 26 to the storage sump 25. The suction-pumping means 84 includes a pair of gears 86 and 87 rotatable within a suitable cavity 88 of a plate 89 (see Fig. 9). One gear 86 is mounted upon a suitable stud 90 while the other is forced upon or otherwise connected to the pump drive shaft in any suitable way. After the plate 89, gear 86 and gear 87 are set in place an inner cover plate 91 is superposed thereon. The cover plate 91 is of substantially the same diameter as the plate 89 but it includes only plain round openings to accommodate the stud 90, shaft 75 and locking screws 92, plus an outlet aperture 93, the purpose of which will be shortly described.

The force-feed-pumping means 85 include a gear 94 on the stud 90 meshing with a driving gear 95 secured to the main drive shaft 75 (see Fig. 8). Thereafter, a plate 96 with a cavity 97 accommodating gears 94 and 95 is superposed upon the inner cover plate 91 (see Fig. 8). Next, the outer cover plate 98 is placed upon the plates 89, 91 and 96 and is held thereon with screws 92.

A conduit 99 extends from the collector sump 26 upwardly to the union 100 on the pump body 73 (see Fig. 4), thence through a suitable duct 101 to the gears 86 and 87 so that the latter during rotation can draw lubricant through the conduit 99 and force it upwardly through ducts 102 and 103 to expell the lubricant from the latter into the upper sump or reservoir direct; thus, preventing an excess of lubricant in the arm 18. The force-feed-pumping means is adapted to draw lubricant from the sump 25 through a suitable opening 104 and, while the gears 94 and 95 rotate, force the lubricant upwardly through the ducts 105 and 106 to the union 107 (see Figs. 1 and 6), thence through the conductor pipe 108 to the union 109 on the end cap 58 for lubricating the needle-operating mechanism. A telescoping connection 109' is provided, to enable disconnecting union 107 without disconnecting union 109, and this telescoping connection is immersed in lubricant at all times to insure a good suction joint and to prevent seepage from the line. By immersing the suction joint in the lubricant air seepage therethrough is prevented and good suction through the outer or main opening is thus assured.

Concurrently, the pump 71 can, and is, also used to force the lubricant through duct 110 into channel 111, thence upwardly through ducts 112 and 113. The duct 112 conducts lubricant into an aperture 114 which may merge with a hole, or with a groove 115, the latter, when used, extending completely or substantially completely around the face of the bushing 30, thence into the upper aperture to lubricate the interior of the bushing 30 so that the main shaft will rotate freely therein.

The aperture 114 and groove 115 may direct lubricant to an aperture 116 extending axially of the main drive shaft to an aperture 117 in the eccentric 43 in order to lubricate a connection 118 between the crank arm 41 and the eccentric. Alternatively, the groove 115 may be in a face 119 of the flange 120 on the drive shaft 27, instead of on the face of the bushing 30. Also, by leaving a portion of the face of the bushing not grooved no lubricant will flow to the aperture 116 as the latter overlies the uncut section, and an intermittent flow of lubricant to the aperture 117 will result.

Similarly, the duct 113 extends and directs

lubricant to an aperture 121 in the bushing 29 extending through the lower side of the bushing to the shaft 27 to direct some of the lubricant to the shaft and thence through an open channel and hole 122 to an aperture 123 on the eccentric 44 to lubricate the connection 124 between the eccentric and the connecting arm 42. Thus, it will be seen that the pump provides a simple yet highly advantageous lubricating structure capable of insuring force-feed lubrication to the main bearings 29 and 30 in the driving head 28, bearings 34 and 35 of the work head 33, and to the crank arm bearings 69 and 70, as well as to the general operating instrumentalities (e. g., duct 66 to the needle-operating mechanism, hereinbefore described). Surplus lubricant which may seep from any of these bearings can drop downwardly into the sump 25. For example, suitable slingers 154 may be provided to divert lubricant passing out over the shaft into bores 155 and 156 which in turn have small holes extending downwardly and inwardly of the frame to the sump.

The aperture 117 of the eccentric 43 may also direct the lubricant to an aperture 125 which will pass it to the channel 49 and blocks 47 and 48. Thence, the lubricant may be directed through suitable channels, ducts and the like through other crank arms, shafts and the like to various operating parts remote from the pump.

It should be particularly noted that the main body 73 of the pump 71 is provided with a recess 126 at its lower end, adapted to receive a filter 127 which may be in the form of a tubular felt member. Preferably, this filter is of slightly larger diameter than the recess so that it may be snugly forced therein and partially held thereby. The length thereof is proportioned so that its lower edge 128 sets upon the bottom 129 of the lubricant sump 25 when the pump is in the operative position shown in Fig. 4. Thus, any lubricant drawn into the pump by the force-feed-pumping means 85 is cleaned through the filter 127.

Alternatively, the filter may be in the form of a wire frame with a cloth covering. One such modification is shown in Fig. 15 including a wire frame 127*a* of spiral shape enveloped by a cloth 127*b*. Preferably the upper end has a snug fit with the recess 126 and the lower end seats upon the bottom 129 of the sump. The spiral causes this form of filter to serve like a bellows, thus insuring good seating in the sump and providing added cloth-filtering surface.

A shield 130 is provided with apertures 131 and 132 to engage ends of the bushings 29 and 35 to be held in place, while wall sections such as 130*a*, 130*b* and 130*c* thereon engage inner walls of the frame to prevent lubricant mist from adversely escaping to the shaft and other improper places outwardly of the frame.

In the event of the force-feed-pumping means building up excessive pressure through the various ducts, an arrangement is provided to relieve such excess pressure. Such means is most clearly shown in Fig. 10 and includes a relief valve 133 preferably supported directly in the main body 73 of the pump 71, and includes a plunger 134 having a beveled end 135 adapted to close the end 136 of an aperture 137 connecting with the main duct 106 of the force-feed line. The plunger 134 is axially movable in a bore 138 of a stud 139 which is screwed into a suitable threaded bore 140 of the pump body 73. A coil spring 141 is provided to yieldingly maintain the plunger in seating engagement as shown in Fig. 10. When excess pressure is built up in the force-feed line the plunger is forced back against the coil spring 141 and then allows the lubricant to seep or overflow through the aperture 142 back into the sump 25.

It will be readily appreciated that a plurality of pipes such as the pipe 108 may be suitably connected to the force-feed line (e. g., auxiliary line 108' shown by dot-and-dash lines in Fig. 1) which may direct lubricant to some other operating mechanisms in the sewing machine.

Of utmost importance, the present invention provides a very novel and highly advantageous mounting structure 72 for the pump 71. In its preferred form, this mounting structure includes a plurality of side arms 143 and 144, preferably integral with the main boly 73 of the pump 71 provided with bores 145 and 146 adapted to accommodate bearings 29 and 30 which are preferably in the form of inserted bushings. Projections 147 and 148 on the bushings 29 and 30, respectively, provide a sturdy mounting upon which the complete pump may be pivotally moved from the operative position within the housing 36, and with the filter 127 resting upon the sump 25 as shown in Figs. 1 and 4, into a raised or retracted position partly outside the machine as shown by the dotted lines in Fig. 4. In the latter position it is a very simple matter for the operator to replace a clogged filter 127 with a new clean one, and to easily clean sediment from the storage sump 25.

Another advantage which flows from this feature is that it is possible for the operator to easily and quickly disassemble the various parts of the pump units 84 and 85 in order to make repairs. It should be noted that this mounting is such that the driving means including the driving member 32 and driven member 75 are always in operative engagement with each other whether the pump is in the lowered operative position within the housing or whether it is in the raised retracted position partially outside the housing through the opening 37.

The pump unit is locked on the bushings 29 and 30 as by a screw 149 in the arm 144; and, if desired, a similar screw 149 can be provided in the other arm 143.

When the pump is in the raised position shown with dot-and-dash lines in Fig. 4, it is a simple matter to place a strainer 127 into the recess 126 whereupon the pump may be easily pivotally moved into the lowered position shown by solid lines in Fig. 4, where the pump 71 and the bottom 129 of the sump 25 serve to effectively lock the strainer in the operative position.

Preferably, the unions 100 and 107 are disconnected prior to swinging the pump into the raised retracted position so that there is a minimum of twisting or kinking of the tubing.

The projections 147 and 148 might be projections on the side walls 20 and 21 if the bearings 29 and 30 are made integral with the frame 15, and if the latter were of split construction, as will be readily appreciated.

Efficiency of the present lubrication mechanism is maintained by preventing loss of lubricant adversely out of the frame, and advantageously preventing the same from running down over the sides of the frame where it might spoil work. To this end the present invention provides a lubricant collector and divertor, such as shown in Fig. 4, including a well 160 adjacent seating surfaces 161 and 162 on the frame 15 and arm members

18, respectively, with a duct or channel 163 for conducting any lubricant which seeps through the surfaces 161 and 162 back into the sump 26.

Alternatively, as shown in Fig. 11, the seating surfaces may be completely sealed against escape of lubricant. For example, the frame 15 may be provided with a depending flange 164 adapted to project down into a well 169' below the usual level of oil or other lubricant therein. The frame 15 and member 18 may be provided with seating surfaces 166 and 167 and may be secured together by screws or any other suitable means. Openings 165 may be provided therein at the seating surfaces to allow passage of lubricant to the well and from the well back into the sump 26 whenever a predetermined level therein is reached; e. g., over the top of the inner edge formed by the seating surface 166.

Openings and covering plates are very often provided in sewing machines to provide occasional ready access to small operating parts. However, it has always been a real problem to prevent lubricant mist and drops within the frame from seeping therethrough. Figs. 12 and 13 disclose a simple yet very effective structure for preventing such adverse seeping of lubricant. For example, a plate 168 which fits into an opening 169 is provided with a peripheral groove 170 so that any lubricant mist which initially passes the inner edge section of the plate 171 has a tendency to collect in the groove 170 and then travel by gravity to the lower section thereof to be diverted through a suitable channel or duct 172 back inside the frame again. The outer peripheral edge 173 of the plate serves as a second plate in preventing adverse seepage of lubricant through the opening and serves to confine the lubricant to the peripheral groove 170 until it is diverted back into the inside of the frame.

Another place through which lubricant adversely escapes is the outer section of the stud and bearing extending through a side wall of the sewing machine frame; for example, any lubricant forced to a bearing might pass outwardly of the stud and bearing and run down over the side of the machine. To overcome this disadvantage the present invention, as shown in Figs. 1 and 14, provides a recess 175 around the stud and bearing 46 and 46a, respectively, extending inwardly of the face 176 of the frame 15 to form a well or collector for any lubricant escaping the stud and bearing. At the bottom of the recess a duct 177 is provided extending downwardly and inwardly of the frame to divert any lubricant collecting in the recess 175 back into a suitable sump within the frame.

Other variations and modifications may be made within the scope of this invention, and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new is:

1. In a sewing machine the combination of a main frame; a drive shaft; a pair of bearings on said frame for said drive shaft; a pump; driving means between said pump and said drive shaft; and means on said bearings and said pump for maintaining the driving means in operative engagement.

2. In a sewing machine the combination of a main frame; a drive shaft; bearings in said frame for the drive shaft; a pump having a supporting structure, said supporting structure having a plurality of apertures therein; and projections on said bearings adapted to enter said apertures and to support said pump.

3. In a sewing machine the combination of a main frame; a drive shaft; bushings in said frame, for said drive shaft; a driving member on said drive shaft; a pump; a driven member on said pump; and means on said bushings for supporting said pump as a unit and for maintaining the driven member thereon in operative engagement with the driving member.

4. In a sewing machine the combination of a main frame; a drive shaft; bearings in said frame; a spiral driving member on said drive shaft; a pump; a spiral driven member on said pump; and means on said bearings for supporting said pump for swinging movement thereon and for maintaining the spiral driven member in operative engagement with the spiral driving member.

5. In a sewing machine including driving instrumentalities, the combination of a main frame; a housing for said driving instrumentalities, provided with a side opening; a pump; and means for supporting said pump relative to said housing, for supported movement into said housing and outwardly relative to said opening.

6. In a sewing machine the combination of a main frame having walls defining a housing with a side opening; a drive shaft; a pump; driving means for said pump; means for supporting said pump relative to said housing, for supported movement to a concealed position within the housing and to an exposed position at the opening; and means for maintaining the driving means in normal operative engagement when the pump is in both the concealed and exposed positions.

7. In a sewing machine the combination of a main frame; a sump having a wall; a pump; a drive shaft; bearing means in said frame for said drive shaft; means for supporting said pump for supported swinging movement as a unit on said bearing means into and out of said sump; and a filter for filtering oil in the sump and clamped in an operative position between said pump and said wall of the sump when the pump is swinging into position in said sump.

8. In a sewing machine the combination of a main frame; a sump; a drive shaft for said sewing machine; a pump; a filter; and means for mounting said pump for pivotal movement as a unit relative to said drive shaft as a pivotal axis and for clamping said filter between the pump and the sump.

9. In a sewing machine the combination of a main frame; a drive shaft; at least one bushing for said drive shaft, having an oil-conducting hole extending from the exterior of said bushing to the interior thereof; and an oil pump having a supporting structure with a bore for engaging said bushing and having a duct extending to the oil-conducting hole in the bushing.

10. In a sewing machine the combination of a main frame; a drive shaft having at least one oil-conducting aperture therein; at least one bushing for supporting said drive shaft, and having an oil-conducting aperture extending from the exterior to the interior thereof, and to the aperture in the drive shaft; and a pump supported as a unit on said bushing and having at least one duct for directing lubricant to the apertures in the bushing and in the drive shaft.

11. In a sewing machine the combination of a main frame; a drive shaft; a bushing for said drive shaft; a pump; driving means on said

drive shaft and said pump; and means on said bushing for maintaining said driving means, pump and drive shaft in operative relationship.

12. In a sewing machine the combination of a frame; at least one bushing in said frame; a main drive shaft supported by said bushing; a pump; means on said bushing for supporting said pump as a unit; suction-pumping means; force-feed-pumping means; and a drive shaft in said pump, having an operative connection directly with the main drive shaft for operating both the suction and the force-feed-pumping means concurrently.

13. In a sewing machine the combination of a main frame; operating mechanism in said frame; at least one conductor for directing oil to said operating mechanism; a main drive shaft; a pump including a pump body having oil-conducting ducts therein; a drive shaft on said pump operatively associated with said main drive shaft; a plate on the pump adapted to accommodate suction-pumping means; a separation plate; a second plate adapted to accommodate force-feed-pumping means, said suction-pumping means and said force-feed pumping means being in communication with said oil-conducting ducts; a cover plate; and means for securing said plates together and to said pump body.

14. In a sewing machine the combination of a main frame; a main drive shaft; operating mechanism; a bushing for said main drive shaft; means for supporting said pump as a unit on said bushing; and means for intermittently feeding oil from said pump to said operating mechanism.

15. In a sewing machine the combination of a main frame; a main drive shaft having a shoulder thereon and an aperture extending from said shoulder through said main drive shaft to an outlet point; a bushing on said main frame having an aperture therein for communication with said aperture extending from said shoulder; and pumping means supported on said bushing, and for directing oil to the aperture therein and thence to said outlet point.

16. In a sewing machine the combination of a main frame; a main drive shaft having a shoulder thereon, and an aperture extending from said shoulder through said main drive shaft to an outlet point; a bushing on said main frame having an aperture and a groove therein for communication with said aperture extending from said shoulder; and an oil pump supported on said bushing for directing oil to the aperture therein and thence to said outlet point.

17. In a sewing machine the combination of a shaft; a sump for lubricant; and a frame having an outer face and at least one bearing for said shaft, with a recess around the bearing inwardly of the outer face for collecting escaping lubricant and having a duct for diverting lubricant collected in the recess to the sump, said recess being of such size and configuration relative to said shaft as to be open at said outer face.

18. In a sewing machine the combination of a main frame; a housing provided with a side opening; a pump; and means for supporting said pump relative to said housing for supported pivotal movement into said housing and outwardly relative to said opening.

19. In a sewing machine the combination of a main frame; a bushing means on said main frame, having an aperture therein; a main drive shaft having a shoulder means, one of said means having a groove thereon communicating with said bushing aperture, and said main drive shaft having an aperture extending from said groove through said main drive shaft to an outlet point; and an oil pump supported on said bushing and adapted to direct oil to the aperture therein, to the groove, and to the aperture in the drive shaft.

20. In a sewing machine the combination of a main frame; a drive shaft; bearings in said frame for the drive shaft; a pump having a supporting structure; and cooperating means on said supporting structure and said bearings for supporting the pump on the latter for swinging movement thereon.

21. In a sewing machine the combination of a main frame; a drive shaft; bearing means in said frame for said drive shaft; and a pump having a supporting structure, said supporting structure having aperture means therein and said bearing means having means extending into said aperture means to support said pump.

22. In a sewing machine the combination of a main frame having walls defining a housing with an opening; a drive shaft mounted on said frame; a pump for oil or the like; driving means on said drive shaft; driven means on said pump; and means associated with said drive shaft for pivotally supporting said pump as a unit for swinging movement relative to said drive shaft as a pivotal axis between a concealed position in said housing and an exposed position adjacent said opening, and for maintaining said driving and driven means in operative engagement when the pump is in said concealed and exposed positions and while being swung between said positions.

23. In a sewing machine the combination of a main frame having walls defining a housing with an opening; a drive shaft mounted on said frame; a pump for oil or the like; and means associated with said drive shaft for pivotally supporting said pump as a unit for swinging movement relative to said drive shaft as a pivotal axis between a concealed position in said housing and an exposed position adjacent said opening.

24. In a sewing machine the combination of a main frame having walls defining a housing with an opening; a drive shaft; bearing means in said frame for said drive shaft; a pump having a supporting structure; and cooperating means on said supporting structure and said bearing means for supporting the pump on the latter for swinging movement thereon between a concealed position in said housing and an exposed position adjacent said opening.

25. In a sewing machine, the combination of a main frame; a sump in said main frame having a wall; a drive shaft; a filter; walls closing the ends of the filter; a pump having a recess accommodating said filter, said filter projecting outwardly beyond said recess; and means for concurrently supporting said pump in operative relationship with the drive shaft for clamping said filter in said recess, and for concurrently supporting one end of the filter entirely in engagement with the wall of the sump so that the wall of the sump forms a closure for the end of the filter.

NORMAN F. TOWNSEND.
FRANCIS P. TAMBURRO.

CERTIFICATE OF CORRECTION.

Patent No. 2,299,439. October 20, 1942.

NORMAN F. TOWNSEND, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, second column, line 47, claim 7, for the word "swinging" read --swung--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of December, A. D. 1942.

Henry Van Arsdale,
Acting Commissioner of Patents.

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