

Nov. 27, 1956

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SEWING MACHINE LUBRICATION
Filed Dec. 15, 1953

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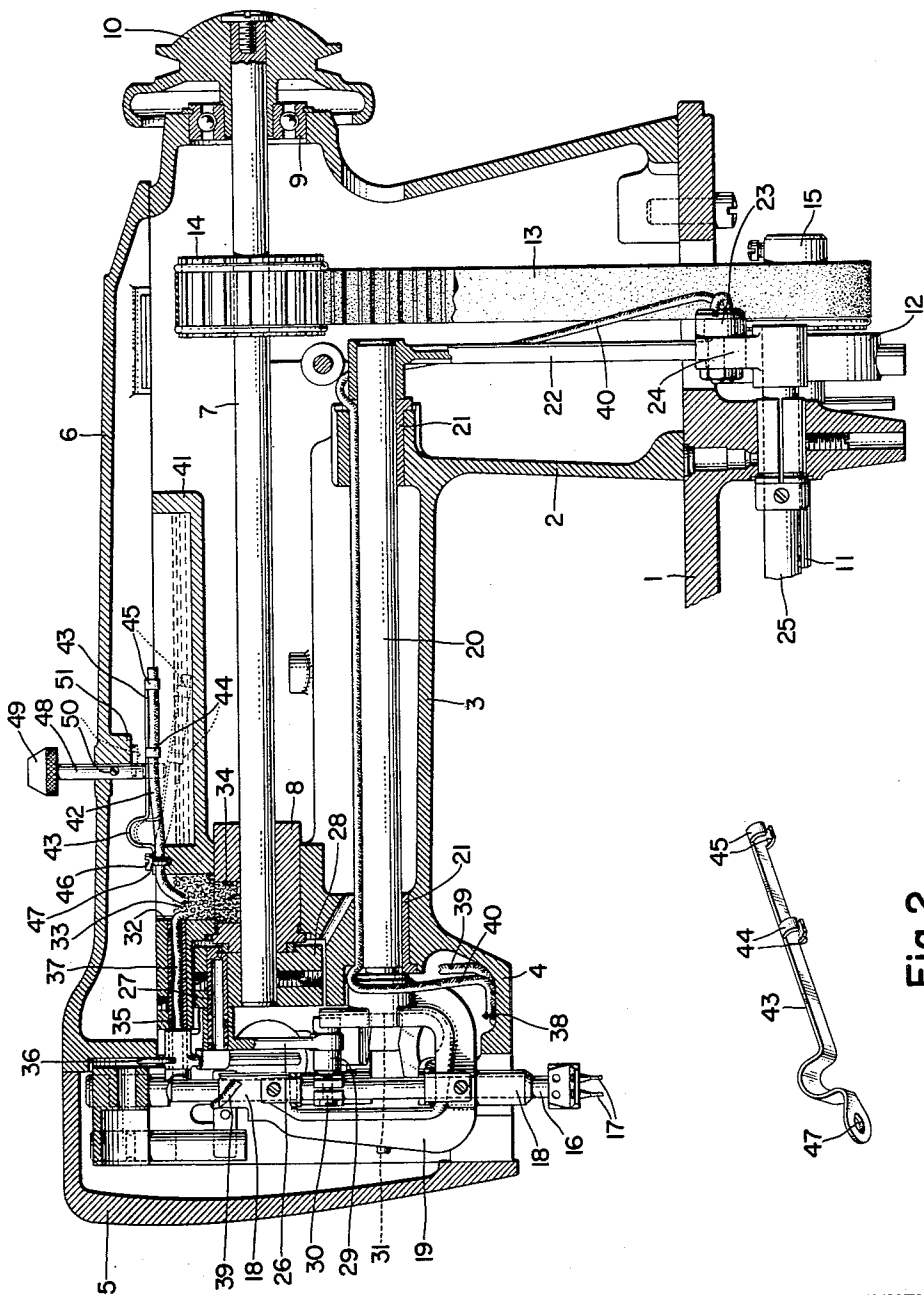


Fig. 1.

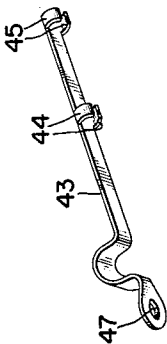


Fig. 2.

WITNESS

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SEWING MACHINE LUBRICATION

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Application December 15, 1953, Serial No. 398,275

2 Claims. (Cl. 184—6)

The present invention relates to sewing machine lubrication and has for a primary object to provide an improved means for lubricating the head mechanism of a sewing machine.

It is a further object of this invention to provide, in a sewing machine, a new and improved means for controlling the flow of lubricant from a reservoir to the mechanism to be lubricated, such as the head mechanism.

More particularly, it is an object of the present invention to provide means for lubricating the mechanisms of a sewing machine that includes a reservoir as a source of lubricant, a wick for conducting lubricant from the reservoir, and a control means for bringing the wick into contact with and removing it from contact with the lubricant in the reservoir, thereby to control the flow of lubricant from the source to the parts to be lubricated, which control means is inexpensive, efficient, durable, and readily adapted to be actuated exteriorly of the machine.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby, will be readily understood by those skilled in the art.

Fig. 1 is a fragmentary vertical section view of a sewing machine embodying the present invention.

Fig. 2 is a perspective view of the wick-supporting leaf spring per se which is illustrated in Fig. 1.

The sewing machine as herein illustrated is substantially the same as that illustrated in the copending application Serial No. 432,382, filed May 26, 1954, which is a continuation-in-part of abandoned application, Serial No. 321,801, filed November 21, 1952, and to which reference may be had for a more complete description of the same. The machine is herein illustrated and described only insofar as is necessary to obtain a complete understanding of the present invention.

With reference to the drawings, there is provided a sewing machine having a bed 1, a standard 2 rising from one end of the bed, and a bracket-arm 3 surmounting the standard and overhanging the bed, which bracket-arm terminates in a head 4. The open end of the head 4 is closed by a face-plate 5 and the open upper surface of the bracket-arm 3 is closed by a cover-plate 6.

A main or arm-shaft 7 is journaled longitudinally of the bracket-arm 3 in suitable bearings 8 and 9. Secured to that end of the shaft 7 extending through the end wall of the standard 2 is a combined hand-wheel and belt-pulley 10 by means of which power is delivered to the machine in the usual manner. A bed-shaft 11 is suitably journaled longitudinally of the bed 1 in depending bearings lugs, such as 12. Power is delivered to the bed-shaft 11 from the arm-shaft 7 by a belt 13 entrained about a pulley 14 fixed to the arm-shaft and a pulley 15 fixed to the bed-shaft.

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Inasmuch as the illustrated machine is of the compound-feed type, there is provided a needle-feed mechanism comprising a needle-bar 16 carrying a pair of needles 17 at the lower end thereof. The needle-bar is mounted for longitudinal reciprocation in spaced bearings 18 formed as part of a carrier frame 19 that is integral with or secured to the end of a needle-bar-oscillating shaft 20 journaled in suitable bearings 21 in the bracket-arm 3. To the other end of the shaft 20 there is secured the upper end of a rock-lever 22 extending substantially vertically through the standard 2. At its lower end, the rock-lever 22 is pivotally connected to a connecting link 23 which, in turn, is pivotally connected to a crank 24 fixed to a feed-advance shaft 25. Thus, upon oscillation of the shaft 25, feeding strokes will be imparted to the needle-feed mechanism. Although not herein illustrated, it will be understood that, in the usual manner, the shaft 25 is part of a lower four-motion feeding mechanism and oscillation is imparted thereto by suitable connections with the bed-shaft 11. This feeding mechanism forms the subject matter of the above-mentioned application Serial No. 321,801 to which reference may be had for a more complete description thereof.

The needle-bar 16 is reciprocated longitudinally by means of a connecting rod 26 pivotally connected at one end to a hollow arm 27 carried by a conventional counter-balanced crank 28 that is secured to the end of the arm-shaft 7. At its opposite end, the rod 26 carries a transverse pin 29, one end of which is secured to the needle-bar 16 through a collar 30 and the other end of which rides in a slot 31 formed as an integral part of the carrier 19. In the illustrated machine, the needles 16 are designed to cooperate individually with one of a pair of vertical axis rotary hooks (not shown) in the formation of a two-thread lock-stitch. The hooks, as is conventional, are journaled in the bed 1 and actuated by suitable connections with the bed-shaft 11 to rotate at a two-to-one ratio with the arm-shaft 7.

The automatic lubrication means for the head-mechanism of the machine includes a lubricant distribution point herein disclosed as a well 32 provided in an integral portion of the bracket-arm 3 and partially filled with an absorbent pad 33. Lubricant is directly carried from the well 32 to various portions of the machine mechanisms, as to the bearing surface between the arm-shaft 7 and the bearing 8 by a radial wick-filled aperture 34 in the bearing 8, and to a pivot pin 35 of a take-up lever 36 by a wick 37 running through a longitudinal bore in the pin 35. Lubricant from these parts, which is normally provided in excess, drains to the bottom of the head 4 where it settles in a sump 38 from which it is recovered and re-used, as by a wick 39 that conducts it to the upper bearing surface between the needle-bar 16 and the carrier 19, and by a wick 40 that conducts it through apertures in the bearings 21 to lubricate the surface between the same and the shaft 20, and then down through the standard 2 along the rock-lever 22 to lubricate the pivotal connections between the rock-lever 22 and connecting link 23, and between the connecting link 23 and crank 24.

Lubricant is conducted to the well 32 from a reservoir 41 formed preferably as an integral part of the bracket-arm 3 by a wick 42 the one end of which is in contact with the absorbent pad 33 in the well 32 and the other end of which is adapted to be placed in contact with the lubricant in the reservoir 41. The end of the wick 42 in the reservoir 41 is carried by the free end of a leaf spring 43, illustrated per se in Fig. 2, which spring includes opposed pairs of ears 44 and 45 that embrace the wick and thus secure it to the spring. The spring 43 is secured to the wall of the reservoir adjacent to the well 32 by means of a screw 46 that passes through an aperture 47 in the

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spring. In its normal condition, the spring will assume the position illustrated in full lines in the drawings, i. e., extending substantially horizontally above the reservoir 41 with the end of the wick 42 that is carried thereby out of contact with the lubricant in reservoir 41. In this position, there will, of course, be no flow of lubricant from the reservoir 41 to the well 32 and thus the lubrication means will be shut off.

When it is desired to obtain a flow of lubricant through the wick 42, the end thereof is brought into contact with the lubricant in the reservoir 41 by depressing the free end of the spring 43, as illustrated in dotted lines in Fig. 1. This may be accomplished by means of a plunger 48 mounted for rotation and axial sliding movements in the cover-plate 6 of the bracket-arm 3 and having a thumb knob 49 on the upper end thereof exteriorly of the machine frame. The plunger 48 is mounted directly above an intermediate portion of the spring 43 whereby when the same is depressed, it will contact and thus depress the free end of the spring 43. The spring may be held in its depressed position against the resilient action thereof by means of a radially extending arm or stop 50 secured to the plunger 48 that is adapted to underlie a boss 51 depending from the cover-plate 6. From the above, it will be seen that when the plunger 48 is depressed and given a quarter-turn, the free end of the spring 43 and the wick 42 carried thereby will be depressed and immersed in the lubricant in the reservoir 41, and will be held in this position. Lubricant will then flow along the wick 42 to the well 32, and from there to the various mechanisms to be lubricated. To terminate the flow of lubricant, the plunger is given a quarter-turn to remove the arm or stop 50 from beneath the boss 51, which thus permits the spring 43 to straighten and thereby lift the wick 42 from contact with the lubricant in the reservoir. The boss 51 may be provided with a groove to receive the stop 50 when in operative position to thus prevent accidental turning of the same due to vibration during operation of the machine which turning would shut off flow of the lubricant.

Having thus described the nature of the invention what we claim herein is:

1. In a sewing machine having a bracket-arm shaft and a take-up mechanism actuated thereby, means for lubricating said bracket-arm shaft and said take-up

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mechanism comprising a pair of lubricant-holding elements including a lubricant distribution point and a lubricant reservoir, wicks leading from said distribution point to said bracket-arm shaft and to said take-up mechanism, a cantilevered leaf spring having the free end thereof normally overhanging one of said lubricant-holding elements, a wick carried by said spring substantially longitudinally thereof and having one end disposed adjacent the free end of said spring and the opposite end disposed in contact with the other of said lubricant-holding elements, and manually-operated means for depressing the free end of said spring and for holding the same down against the resilient action thereof.

2. In a sewing machine having a bracket-arm, a shaft journaled longitudinally of said bracket-arm and a take-up mechanism carried by said bracket-arm and actuated by said shaft, means for lubricating said shaft and take-up mechanism comprising a pair of lubricant-holding elements including a lubricant distribution point and a lubricant reservoir, wicks leading from said distribution point to said shaft and to said take-up mechanism, a cantilevered leaf spring having the free end thereof normally overhanging one of said lubricant-holding elements, a wick carried by said spring substantially longitudinally thereof and having one end disposed adjacent the free end of said spring and the opposite end disposed in contact with the other of said lubricant-holding elements, a plunger carried by said bracket-arm for rotation and longitudinal sliding movement and arranged normal to said spring, whereby when said plunger is moved longitudinally the free end of said spring and the end of the wick carried thereby will be depressed into contact with the adjacent lubricant-holding means, an arm on said plunger and a cooperating boss on said bracket-arm under which said arm will lie upon being moved longitudinally and rotated to releasably hold the spring depressed.

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