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LUBRICATING DEVICE FOR THE LOOPERS OF SEWING MACHINES

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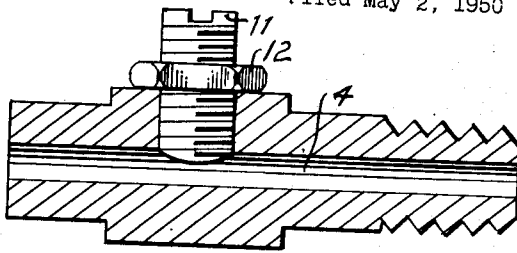


Fig. 4.

Fig. 1.

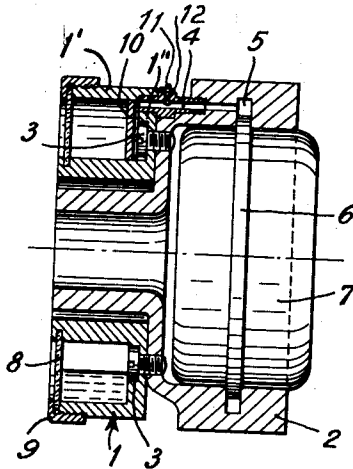


Fig. 2.

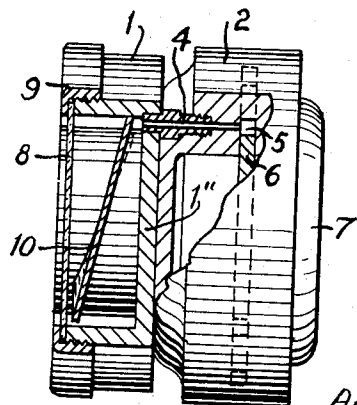
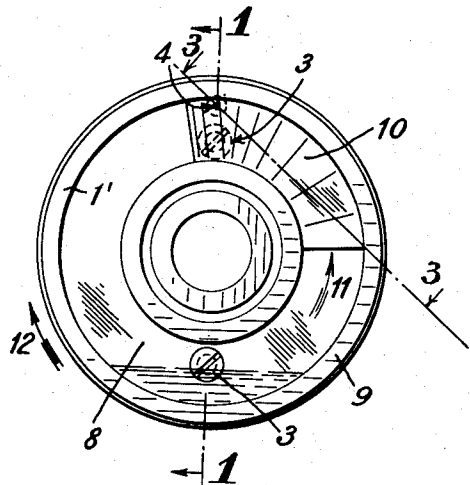


Fig. 3.

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LUBRICATING DEVICE FOR THE LOOPERS
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4 Claims. (Cl. 112-256)

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The present invention relates to a lubricating device for the looper of a sewing-machine, the said looper having a guideway for the support of the bobbin casing.

It has been established that in high speed sewing-machines, that is to say machines which are capable of producing 3000 stitches per minute, which corresponds to a speed of 6000 R. P. M. of the looper, the lubrication by oil-can of the guideway of the looper is almost entirely prevented by the draining away of the oil under the influence of centrifugal force. In order to overcome this disadvantage, it has been proposed to replace the oil-can lubrication by central lubrication under pressure. This solution requires however the use of a pump and is therefore relatively costly.

The present invention does away with the use of a pump and the device which is the object of the same is characterized in that it comprises a lubricant container secured to the looper and provided with a conduit for leading lubricant to the guideway of the looper under the action of centrifugal force, the cross-section of passage of said conduit being so small that the capillary forces prevent the lubricant from passing through said conduit when the sewing machine is at rest.

The accompanying drawing shows diagrammatically and by way of example one embodiment of the device according to the invention.

Fig. 1 is a sectional view along the line I—I of Fig. 2,

Fig. 2 is a front view of Fig. 1,

Fig. 3 is a sectional view taken along the line 3-3 of Fig. 2; and

Fig. 4 is a detail view, on an enlarged scale of a portion of Fig. 1.

The lubricating device shown is applied to a rotatable looper of a sewing-machine and comprises a container 1 for the lubricant, for example oil, co-axially secured to the looper 2 by means of screws 3. A conduit 4 connects the container to a groove 5 provided in the looper 2 and forming a guideway for a rib 6 of the support for the bobbin casing 7 shown diagrammatically. The container 1 is constituted by a cylindrical collar 1 whose inner diameter is preferably smaller than that of the groove 5 to facilitate the arrival of the oil to the said groove under the action of centrifugal force, as will be explained hereafter.

The conduit 4 is situated at the periphery of the container 1 at a distance from the axis which corresponds to the greatest inner radius of the said container.

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One of the end walls of this container 1 is formed by a ring 8 of transparent material, for example Plexiglas, retained by a collar 9 screwed on the body of the container 1. A sloping guide wall 10 is situated inside the container adjacent the other end wall 11 thereof so as to reduce progressively the section of the passage of the oil in the container upstream of the mouth of the conduit 4, the direction of flow of the oil being shown by the arrow 11. The operation of the device described is as follows:

On starting, the inertia of the oil contained in the container 1 creates an excess of pressure between the sloping guide wall 10 and the end wall 11 of said container 1 adjacent to the mouth of the conduit 4, the said excess of pressure being added to the pressure due to centrifugal force. The oil therefore flows relatively abundant through the said conduit 4 in order to feed the guiding groove 5 of the looper 2. At working speed, the flow of lubricant is weak because the oil has practically no relative movement with respect to the body of the container 1 which turns in the direction of the arrow 12 and only the pressure due to centrifugal force acts on the oil. The flow of oil through the conduit 4 is therefore less than on starting, the sloping guide wall 10 then exerting no influence. When at rest, the centrifugal force and the action of the sloping guide wall are zero, and the section of passage of the fluid in the conduit 4 is so small as to prevent the oil from reaching the race 5. The capillary forces are used here to prevent the passage of the oil when the sewing machine is at rest.

A screw 11 is preferably threadably extended into the conduit 4 to adjustably regulate the flow of oil through the latter, and a lock nut 12 can be provided on the outer end of the screw 11 to maintain the latter in its adjusted position.

Although the device described is adapted to a rotatable looper, it is well understood that it might also be used for known types of oscillating loopers.

Instead of having only one transparent wall, the container could be completely transparent, for example of moulded Plexiglas, so as to be able easily to verify the contents.

What I claim is:

1. A lubricating device for the looper of a sewing machine having a guideway for supporting the bobbin casing; said lubricating device comprising a container secured to the looper for movement with the latter and defining an

3 internal compartment for lubricant, the outer extremities of said compartment terminating radially inward with respect to the guideway for the bobbin casing, said container having a conduit extending from said compartment for lubricant at a radially outward location in an end wall thereof and opening into the guideway for leading lubricant to the latter under the action of centrifugal force, and a guide wall in said compartment adjacent said end wall and sloping toward the end of said conduit opening into said compartment in the direction opposite to the movement of said container, said sloping guide wall and adjacent end wall defining a passage for the lubricant to said conduit having progressively decreasing cross-sections whereby, on starting, the inertia of the lubricant and centrifugal force cause the lubricant to be compressed between said guide wall and the adjacent end wall of the container for forced flow through said conduit at a rate greater than the flow during normal high speed movement of the container when centrifugal force alone causes the flow through said conduit.

2. A lubricating device according to claim 1; wherein said conduit has a relatively small cross-section so that capillary forces prevent the flow of the lubricant therethrough when the sewing machine is at rest.

3. A lubricating device according to claim 2; including control means for regulating the flow of lubricant through said conduit.

4. A lubricating device for the looper of a

sewing machine having a guideway for supporting a bobbin casing; said lubricating device comprising an annular lubricant container secured to the looper and having an outer side wall disposed with its inner surface radially inward relative to the guideway, said container having a conduit extending to the guideway and opening into said container through an end wall of the latter for leading lubricant to the guideway under centrifugal force, and a helical guide wall in said container sloping toward the end of said conduit opening through said end wall of the container in the direction opposed to the rotational movement of said container with the looper, said guide wall and end wall of the container defining a lubricant feeding passage leading to said conduit and having progressively decreasing cross-sections so that, on starting, the lubricant is compressed in said passage by inertia and centrifugal forces for forced feed through said conduit.

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