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LUBRICATING MEANS FOR SPINNING RINGS

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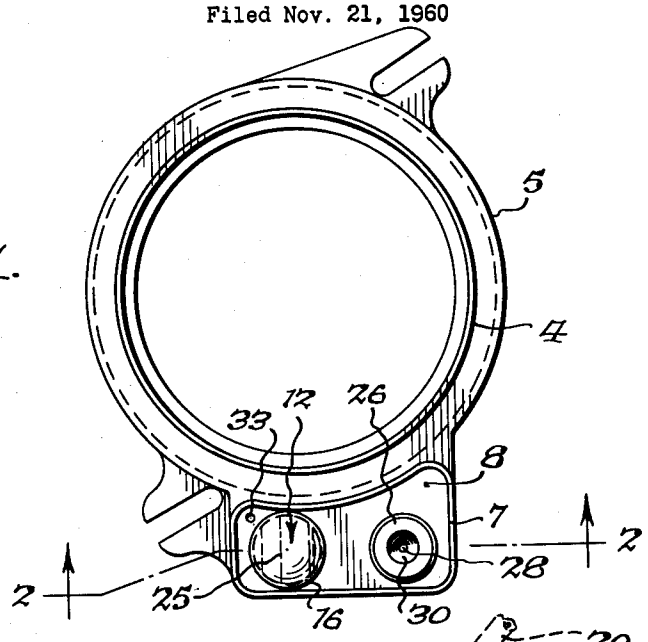
Fig. 1.



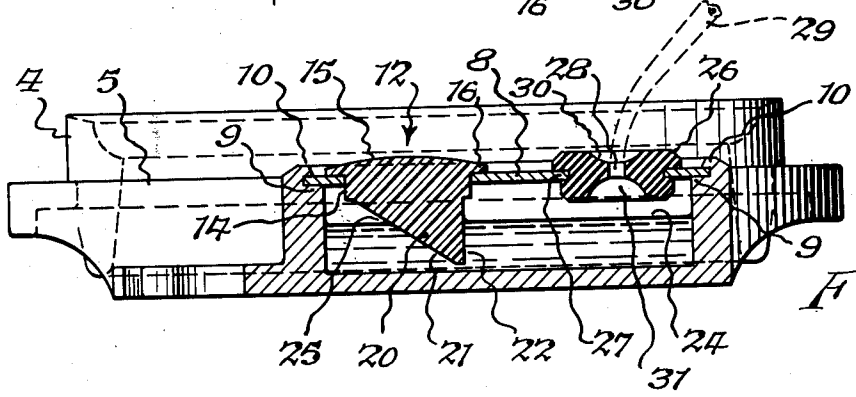


Fig. 2.

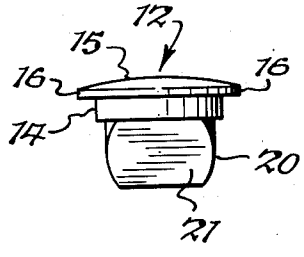


Fig. 3.

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LUBRICATING MEANS FOR SPINNING RINGS

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This invention relates to the lubrication of spinning rings of the kind used in connection with the spinning and twisting of yarns.

The supplying of sufficient lubrication to those surfaces of spinning rings with which the travellers contact is very important to provide for smooth running travellers and to avoid rapid wearing out of the travellers and the rings. The lubricant is generally supplied to these bearing surfaces of spinning rings from an oil cup or reservoir in the spinning ring holders and it is necessary therefore for persons charged with the lubrication to maintain a constant supply of lubricant in the cups or reservoirs.

One of the objects of this invention is to provide a cover for a lubricant cup or reservoir which is so constructed as to facilitate the maintaining of the necessary amount of lubricant in the cups or reservoirs by persons charged with this work.

It is also an object of this invention to provide an oil cup or reservoir with means whereby the level of oil in the cup can be readily ascertained.

Another object of this invention is to provide an oil cup or reservoir with a cover having mounted thereon an oil indicator of improved construction.

A further object is to provide a cover for an oil cup or reservoir with an oil port of improved and simplified construction.

In the accompanying drawings:

FIG. 1 is a top plan view of a spinning ring and holder therefor provided with an oil cup having an oil level indicator and an oil port embodying this invention.

FIG. 2 is a transverse, sectional elevation thereof on an enlarged scale on line 2—2, FIG. 1.

FIG. 3 is an elevation of an oil level indicator removed from the oil cup cover.

4 represents a spinning ring mounted in a holder 5 which is constructed to be mounted on a solid rail or support member, not shown, of a spinning machine. The ring shown is of the well known conical type having two substantially frusto-conical bearing surfaces with which the traveller contacts, but it will be understood that this invention may equally well be applied to other types of spinning rings having different shaped bearing surfaces. The ring holder is provided at one side thereof with the usual oil cup or reservoir 7, which contains lubricant to be supplied to the bearing surface or surfaces of the ring in any usual or suitable manner, for example, by the usual wicks which extend into the oil cup, or by other means. Such wicks or other oil conducting means are not shown for the reason that they are commonly used in spinning ring holders, so that persons skilled in this art are thoroughly familiar with the same.

The liquid level indicator and the oil port which form the subject matter of this invention are mounted on the cover for the oil cup. This cover 8 is in the form of a plate of metal or other suitable material and is suitably mounted on the upper portion or edge of the cup or reservoir 7. Preferably this plate rests on a shoulder 9 formed on the upper portion of the upright walls of the oil cup. These walls extend slightly above the shoulder 9 and the upper edges thereof are flared over upon the edge portions of the cover, as shown at 10, thus making a permanent oil-tight connection between the cover and the oil cup. This connection prevents contamination of

the lubricant in the oil cup by such foreign matter as lint, fly and dirt, which might otherwise enter into the oil cup. Lint and particles of yarn are of course common contaminants of the air about spinning machines and if such lint or particles of yarn should enter the oil cup and extend outwardly therefrom, they would syphon oil out of the cup to the other parts of the spinning machine where it is not needed and where it would be a detriment. By permanently securing the cover 8 on the cup by means of the integral, turned-over portions 10, such syphoning as well as contamination of the oil by foreign material is effectively prevented.

It is of course very important for operators of spinning machines to determine whether or not there is sufficient oil or other lubricant in each oil cup to ensure proper lubrication. For this purpose we have provided the cover on the oil cup with an oil level indicator 12 which is mounted on the cover 8 and extends downwardly into the oil reservoir through an aperture provided for that purpose in the cover. This oil level indicator includes an approximately cylindrical body portion 14 formed to fit snugly into the aperture provided for the same in the cover plate 8 to form an oil-tight joint therewith, and the indicator terminates at its upper end with a convex surface 15 which is of somewhat larger diameter than the body portion and thus forms an annular flange 16 which rests upon the upper surface of the cover plate 8.

It is well known that it is generally difficult to determine the level of oil or other lubricant in a cup by merely visual inspection of the same through a transparent cover or part of a cover, for the reason that glancing downwardly at the oil in the oil cup does not provide any indication as to the depth of the oil, and it is not practical in devices of this type to provide a sight glass or other indicator on the side of the oil cup through which the oil level can be accurately determined. However, we have provided a transparent oil level indicator with means whereby the oil level can be accurately determined by merely looking downwardly at the upper surface of the oil in the oil cup, and this is effected by providing the lower portion of the oil indicator with a transparent, substantially prismatic extension 20, preferably formed integral with the body portion 14 of the indicator and having the lower edge thereof extending into close proximity to the bottom of the oil cup. This prismatic part has a downwardly inclined face 21 and a straight upwardly extending face 22. It will be clearly seen in FIG. 2 that where the upper surface of the oil 24 in the cup contacts with the inclined face 21 of the indicator, a line is formed which is very clearly visible by glancing downwardly through the upper convex face 15. This intersection of the upper surface of the lubricant in the oil cup is indicated at 25 and is clearly visible, and is in fact magnified by the convex face 15 of the oil level indicator. The magnified line 25 is consequently visible at a considerable distance above the oil cup, thereby facilitating inspection of the oil cups. The lower edge of the inclined face 21 is also visible through the transperent indicator and consequently the distance of the line 25 from the lower edge of this inclined face indicates the amount of lubricant in the oil cup. As the level of the oil in the cup or reservoir is decreased, the intersection of the upper surface of the oil 24 and the inclined face of the oil level indicator 21 indicates the oil level 25 by moving to the right in FIGS. 1 and 2. Conversely as the oil cup or reservoir is filled, the line 25 moves to the left.

It will be noted on inspection of FIGS. 2 and 3 that the cylindrical body portion 14 of the oil level indicator extends somewhat below the lower face of the cover plate 8 so that the top of the prismatic extension 20 is arranged below the lower face of the cover plate. The lower edge of the prismatic extension is within a short distance from

the bottom of the oil cup. Consequently when the level indicator indicates "full," there is still a space for some additional oil, thus giving a person filling the oil cup some leeway before it is overfilled. Also by terminating the prismatic extension above the bottom of the oil cup, there may still be a small reserve quantity of oil in the oil cup after the indicator indicates the oil cup to be empty. The annular flange 16 forms a shoulder which cooperates with the upper face of the cover plate 8 to accurately locate the oil level indicator in correct relation to the oil cup.

The prismatic part 20 is of slightly smaller dimensions in a horizontal direction than the cylindrical body portion 14 which fits snugly in its aperture in the cover plate, and consequently the level indicator can be more easily positioned in and removed from its hole in the cover plate because of the short length of the part of the body which must fit tightly in the aperture in the cover plate.

Since the oil level indicator is mounted on the cover 8 mainly by friction, it can be readily removed if desired to afford access to the interior of the oil cup, for example for inspecting or replacing wicks.

The supplying of oil or lubricant to the oil cup may be effected in any desired manner but preferably we employ for this purpose an oil port 26 of annular form which is also fitted into another aperture formed in the cover plate 8. This oil port may be of rubber or other resilient material and is provided in its periphery with an annular groove 27 and with a portion below the groove of greater diameter than the inner diameter of the groove. Consequently the oil port, because of its resilience, can be readily pressed into the opening provided therefor in the cover plate 8. The portion of the oil port above the groove 27 extends outwardly to a greater extent than the portion below the groove and thus forms a flange which rests on the upper face of the cover plate 8 and limits the extent to which the oil port can be moved downwardly through the hole in the cover plate.

The oil port is provided in the middle portion thereof with a hole or opening 28 through which a nozzle or spout 29 of an oil can may be readily inserted for introducing oil into the oil cup. The upper face of the oil port is also provided with a concave face or depression 30 terminating at the aperture 28 in the oil port. This concave face 30 has the advantage that it readily facilitates the insertion of a spout 29 of an oil can into the aperture 28 and also acts as a funnel to discharge into the aperture 28 any oil which may be spilled on the upper surface of the port.

The aperture 28 of the oil port is of small diameter but since the oil port is made of resilient material, the aperture can be readily enlarged by insertion of the spout of the lubricating can, and then again contracts when the spout is withdrawn. This resilience is greatly increased by providing on the lower face of the oil port a concavity of depression 31 which reduces the thickness of the central part of the port so as to increase its resilience and make it easier to insert the oil spout 29 into the hole 28. This lower concavity 31 consequently leaves the edge portions of the oil port of sufficient thickness so that the oil port can be readily maintained in its hole in the cover plate 8. The two cavities 30 and 31 which result in a relatively thin middle portion, increase the resilience of the oil port so that it can be readily removed from or replaced in the cover plate. By means of the construction described and the tight fit of the oil can nozzle in the oil port, rapid filling of the oil cup is possible, since any overflow due to back pressure of oil in the oil cup as it is filled is avoided. Any other means for introducing lubricant into the oil cup may be provided.

Since the nozzle or spout 29 of a filling can fits snugly into and forms an air tight closure of the aperture 28 we preferably provide a small vent opening in the cover plate 8 so that air contained in the oil cup and displaced by the

introduction of lubricant into the same can readily escape through the vent opening 33. During the withdrawing of oil from the oil cup to the bearing surface of the ring, the aperture 28 in the oil port also serves as a vent for the oil cup.

Since the cover 8 of the oil cup has a liquid tight connection with the oil cup and since the oil level indicator and the oil port have oil tight connections with the cover, it is obvious that escape of lubricant or oil is effectively prevented, thus facilitating keeping the spinning machine clean.

The oil reservoirs of spinning ring holders are frequently located on parts of the spinning machines which are not well illuminated and consequently it is very advantageous to have the oil level indicator show very plainly the level of oil in the cup by means of the line 25 on the prismatic part 20. Furthermore the introducing of additional lubricant into the cup can also be facilitated by making the oil port 26 of a brilliant or contrasting color and making the cover plate 8 of a dark color so that by contrast the oil port will be readily seen.

The term "oil" is herein employed to include any lubricant. The term spinning ring is also used to indicate twisting rings.

It will be understood that various changes in the details, materials and arrangements of parts, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art, within the principle and scope of the invention, as expressed in the appended claims.

We claim:

1. A spinning ring holder having an oil cup formed thereon, a cover for said oil cup secured to and closing said oil cup and having an aperture therein, and a transparent lubricant level indicator having a part which fits snugly into said aperture, and an upper shouldered part forming a stop to correctly position said indicator in said cup, the lower part of said indicator being of substantially prismatic form with an inclined face extending crosswise of the same at an inclination to said cover and terminating adjacent to the bottom of the oil cup, said inclined face when contacted by the upper surface of lubricant in said oil cup indicating the level of lubricant in said oil cup, said prismatic parts of said indicator being positioned below the lower face of said cover to guard against overfilling the oil cup and spaced from the bottom of said oil cup to leave a small quantity of oil in said cup when indicating empty.

2. A spinning ring holder having an oil cup formed thereon, a cover for said oil cup permanently secured to and closing said oil cup and having an aperture therein, and a transparent lubricant level indicator having a body portion extending through said aperture and forming an oil-tight joint therewith and terminating at its lower end below said cover plate, said level indicator including a prismatic part having a surface inclined with reference to the horizontal and extending downwardly from said body portion into spaced relation to the bottom of said cup, the lateral dimensions of said prismatic part being less than said body portion to facilitate insertion of said body portion through said aperture in oil-tight relation to said cover, said body portion having a top which is wider than said body portion and forms therewith a shoulder abutting against the upper face of said cover plate to form a stop to limit the extent to which said level indicator may be inserted through said cover plate to position the same correctly in said oil cup, said top of said level indicator having a convex upper surface which magnifies the position of the upper surface of the lubricant on the inclined surface of the indicator.

3. A spinning ring holder having an oil cup formed thereon, a cover for said oil cup secured to and closing the oil cup, a transparent lubricating level indicator on

said cover, the lower part of the indicator being of substantially prismatic form, with an inclined face extending crosswise of the same at an inclination to said cover and terminating adjacent to the bottom of the oil cup, said inclined face when contacted by the upper surface of lubricant in said oil cup indicating the level of lubricant in said oil cup, said prismatic part of said indicator being spaced below the lower face of said cover to guard against overfilling the oil cup and spaced from the bottom of said oil cup to leave a small quantity of oil in said cup when indicating empty.

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