Nov. 8, 1960 S. A. MINERA 2,959,250

LUBRICANT DISPENSER

Filed Sept. 15, 1958

FIG_1

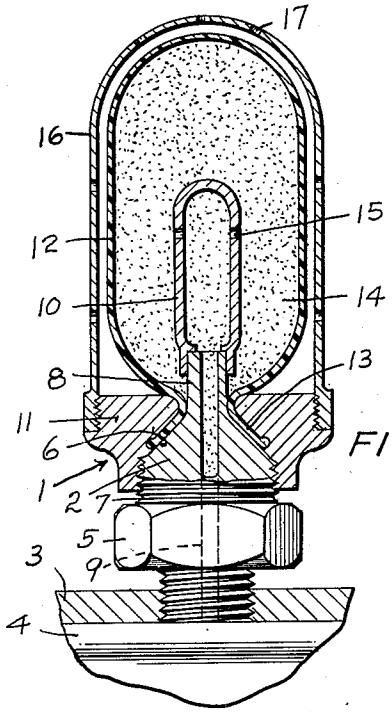


FIG_2

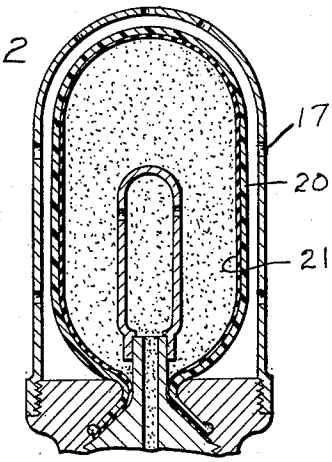


FIG_5

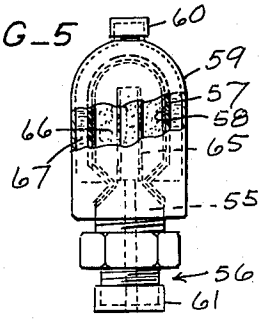


FIG_6

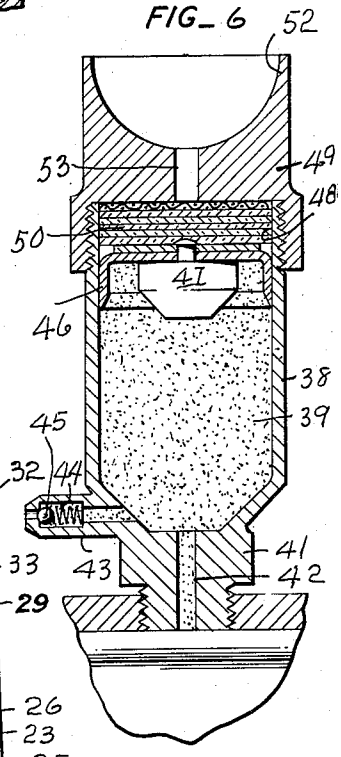


FIG_3

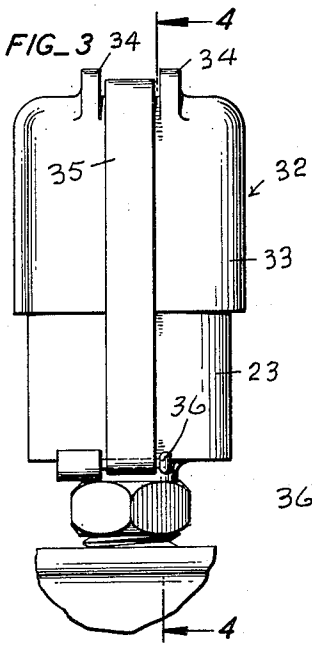
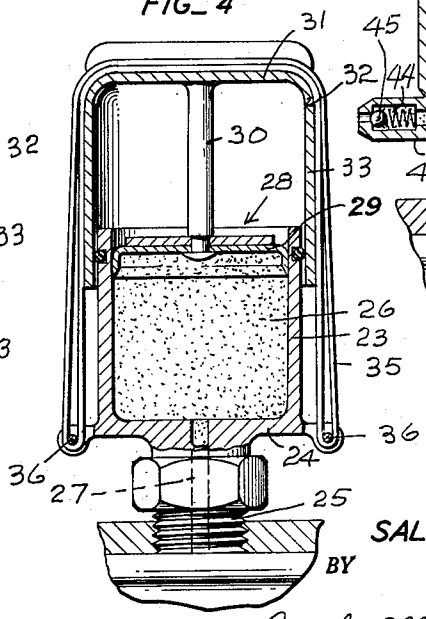


FIG_4



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LUBRICANT DISPENSER

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This invention relates to a lubricant dispenser and has for one of its objects the provision of a lubricant dispenser that is adapted to progressively discharge a lubricant, such as grease, to a bearing surface for lubricating the latter.

Another object of the invention is the provision of a grease dispenser in which a cellulose material of the type adapted to substantially change its size or dimensions under a change in the moisture content is operatively associated with a body of a lubricant to apply pressure to such body upon its change in the dimension of the cellulose material due to a change in its moisture content, to thereby effect a discharge of the lubricant to a bearing surface.

A still further object of the invention is the provision of a grease dispenser in which the grease to be dispensed is contained in a housing of contractable dimensions, and which housing a moist contractable cellulose material so associated therewith in a manner to effect a contraction in the dimensions of the housing upon a drying of the cellulose material and consequent contraction of the latter.

Other objects and advantages will appear in the description and in the drawings.

In the drawings, Fig. 1 is a vertical sectional view through a lubricant dispenser illustrative of one form of the invention in which a cellulose jacket or housing encloses the lubricant.

Fig. 2 is a sectional view showing a modification of the housing of Fig. 1 in that the cellulose has a collapsible liner of a different moisture resistant plastic of Neoprene or the like.

Fig. 3 is a side elevational view of a still further form of the invention.

Fig. 4 is a sectional view taken along line 4—4 of Fig. 3.

Fig. 5 is a reduced size part sectional and part elevational view of a form of the invention in which means is provided for controlling the time and rate of discharge of the grease and for maintaining the plastic material against contraction when in storage or when being carried to different places preparatory to installing the dispenser.

Fig. 6 is a vertical sectional view through a grease dispenser of a type in which the expansion of the cellulose, when wetted, effects a discharge of the grease, instead of one in which the contraction of the cellulose, when drying, is utilized to discharge the grease.

In detail, referring to Fig. 1 the dispenser illustrated comprises a rigid base generally designated 1, which base is provided with a stem 2, the lower end of which is externally threaded for securement in the threaded opening of a bearing 3 that extends to a shaft 4, or other part, to be lubricated.

This stem may have a wrench engaging portion 5 thereon and the upper end of the stem is formed with a frusto-conical surface 6 above a threaded portion 7, said

frusto-conical portion terminating in an upstanding nipple 8. A central open ended bore 9 may extend axially of the stem and through the nipple for conducting grease to bearing 3.

A hollow member 10 may be supported on the nipple 8.

Base 1 may further include a nut 11 adapted to threadedly engage the threaded portion 7 of the stem, and said nut has a frusto-conical inner surface that is complementary to the frusto-conical surface 6 of the stem.

A housing 12, the walls of which are substantially pure cellulose is provided with an opening through which the upper end of stem 2 and the member 10 are adapted to extend into the housing. The lower marginal portion 13 of the plastic housing is adapted to be tightly secured between the frusto-conical surfaces on the nut 11 and stem 2. This housing contains the grease or oil 14 that is adapted to be dispensed, and member 10 is perforated as at 15 so the grease may pass through it and into bore 9.

Preferably, an outer perforated shell 16 spaced outwardly of the housing 12 encloses the latter. This shell may be threaded onto nut 11 and its perforations 17 may vary in number, according to how fast the plastic is to contract.

The cellulose of housing 12 is of the same or similar character to that used in banding machines for placing plastic bands on the necks of bottles, and is held in an aqueous solution, such as approximately 90% distilled water, a preservative, glycerine and a pacifier until ready for use. The cellulose readily takes up the moisture, but is not noticeably affected by the grease, hence as the plastic dries the grease is slowly forced out of the housing and into the bearing.

The main difference between Figs. 1 and 2 is that in Fig. 2 the cellulose plastic housing 20 is around a flexible collapsible liner or inner housing 21 of a polymerized chloroprene such as Neoprene or other collapsible plastic having similar characteristics such as butadiene, etc. As the moisture evaporates from the outer housing 1, it will contract to collapse the Neoprene liner or inner housing 21 to force the lubricant into the bearing.

In Fig. 3 a cylindrical sided cup or housing 23 is provided, which cup has a base member 24. This base member, in turn, has the same threaded portion 25 integral therewith as in Figs. 1, 2 for securing the cup in a bearing.

The cup 23 contains grease 26 to be discharged through the bore 27 that extends through the portion 25 and base member 24.

A plunger 28 is vertically slidable in the cup 23 which plunger may have any suitable means, such as cup washer 29 for making a tight sliding seal with the cylindrical inner wall of the cup.

A piston rod 30 projects upwardly from the piston and is rigidly connected with the head 31 of cap 32 having a cylindrical skirt 33 depending from head 31, which skirt is slidable over the cup 23.

A pair of spaced ribs 34 are formed on the head 31 and an endless band 35 of shrinkable cellulose of the same type as that of housing 12 has return bends at its opposite ends. Said band is adapted to extend across the head 31 between said ribs 34. The bends at opposite ends of said band are respectively adapted to fit over parallel lateral pins 36 that are rigid with the base 24 of the cup at opposite sides of the latter.

In operation, the cup or housing 23 is filled with grease 26 that is supported on base member 24 and the plunger and cap are then respectively positioned within and over the cup. The operator then hooks the ends of a water saturated endless band 35 over pins 36 with the band

disposed between ribs 34 and taut against the cap. As the band slowly dries it will shrink and force the cap and plunger downward to force grease through bore 21 into the bearing. In this manner a continuous supply of grease is fed to the bearing.

After the band 28 has contracted or shrunk to its full limit, the cup 26 may readily be refilled and a new band positioned over the cap 32. These bands are cheap, and can readily be cut from a tube of the cellulose material.

Fig. 6 shows a dispenser in which a cup 38 is provided for the grease 39 and which cup has a threaded base 41 adapted to screw into the bearing. This base is formed with a through bore 42 for the grease, and adjacent to base 41, the cup may be formed with a refilling nipple 43 provided with a passageway 44 through which grease may be injected into cup 38 for refilling the latter. A check valve 45 in passageway 44 prevents discharge of the grease.

The upper end of the cup is provided with a piston 46 having a central projection 47 thereon having an outside contour complementary to that of the inner side of the cup 38 at its lower end.

Above the piston 46 is a chamber 48 the bottom wall of which is the piston 46, and the top wall being the upper end 49 of the cup 38. This chamber contains a supply of dry regenerated cellulose 50 that is adapted to expand to many times its original dry volume. The upper end or head 49 is formed with an upwardly opening cup 52 and a bore 53 communicates between the bottom of cup 52 and the chamber 48, while a fine screen or other porous material, as indicated, may be in the upper end of the chamber extending across the bore 53 so as to permit the downward passage of water therethrough, but which will prevent the cellulose from moving into said bore when it expands.

This dispenser is particularly designed for lubricating bearings that are exposed to the rain and to the elements in relatively inaccessible places which the workmen usually ignore during a rain. When the rain moistens the cellulose 50 it will expand and will slowly force the grease 39 into the bearing. The dispenser may readily and quickly be refilled through the nipple 43 and the expanded cellulose may be quickly replaced by dry cellulose whenever desired, and when convenient to do so.

Fig. 5 shows one manner in which grease dispensers may be prepared and stored for use.

Stem 55 and its threaded lower end 56 may be identical with stem 2 and the threaded lower end of the latter, and the cellulose housing 57 in Fig. 5 may have a liner 58 the same as in Fig. 2, or the liner may be omitted as in Fig. 1.

Instead of the shell 16 of Figs. 1 and 2, an outer imperforate jacket 59 of any suitable water proof material may be provided. This jacket has an opening in its upper end that may be closed by a removable cap 60 and a removable cap 61 may close the lower end of the stem 55.

This jacket is screwed onto the outer threads of the upper portion of stem 55 the same as shell 16 is screwed onto stem 2.

Whether or not the inner hollow perforated member 65 as shown in Fig. 5 is used is not particularly important.

Grease 66 fills the housing 57, and water 67 plus a small amount of glycerine and a preservative fills the jacket 59, or substantially fills it.

The grease cellulose housing will remain expanded indefinitely under this arrangement, hence the dispensers can be prepared and stored in any desired quantity.

In use, the exhausted dispenser may be removed from a bearing, and cap 61 is removed and screwed into the bearing. After this, cap 60 may be removed. If desired the water 67 may be emptied from jacket 59 before the dispenser is screwed into the bearing, or if desired, part or all of the water may be left in the jacket so that shrinkage of the cellulose housing will be quite slow and delayed, until drying of the housing commences.

After the maximum shrinkage of the cellulose has occurred, a filled fresh housing may replace the shrunken one and the water 67 is replaced, and the dispenser is ready for use again, or when caps 60, 61 are again used the dispenser is ready for storage and future use.

I claim:

1. A lubricant dispenser for dispensing lubricant to a bearing, comprising: a housing for a body of lubricant and a body of said lubricant filling said housing, a base member supporting said housing and having a fitting for releasably securing said base member to a bearing, an open ended discharge passageway extending through said fitting and into communication with said body of lubricant, said housing comprising walls of shrinkable cellulose material adapted to transmit pressure to said body upon shrinkage thereof for forcing said lubricant out of said passageway.

2. A lubricant dispenser for dispensing lubricant to a bearing, comprising: a housing for a body of lubricant and a body of said lubricant filling said housing, a base member supporting said housing and having a fitting for releasably securing said base member to a bearing, an open ended discharge passageway extending through said fitting and into communication with said body of lubricant, said housing comprising walls of shrinkable cellulose material adapted to transmit pressure to said body upon shrinkage thereof for forcing said lubricant out of said passageway, said housing further including a flexible liner of plastic material adapted to be in direct contact with said body of lubricant and collapsible under pressure from said cellulose material.

3. A lubricant dispenser for dispensing lubricant to a bearing, comprising; a housing for a body of lubricant and a body of said lubricant filling said housing, a base member supporting said housing and having a fitting for releasably securing said base member to a bearing, an open ended discharge passageway extending through said fitting and into communication with said body of lubricant, said housing comprising walls of shrinkable cellulose material adapted to transmit pressure to said body upon shrinkage thereof for forcing said lubricant out of said passageway, an outer enclosure of rigid material enclosing said housing and formed with openings for admitting air to the walls of said housing and for placing said walls of said housing in communication with the atmosphere.

4. In combination with a bearing, a lubricant dispenser including a base member having a fitting secured to said bearing, a housing carried by said base member and a body of lubricant filling said housing, a discharge passageway opening into said bearing at one end thereof and into said housing at its opposite end, said housing including a plunger in engagement with the side of said body opposite to said base member, and shrinkable, moisture saturated plastic material adapted to shrink to substantially smaller dimensions upon vaporization of the moisture therein extending between said plunger and said base member for urging said plunger against said lubricant and out of said discharge passageway upon shrinkage of said plastic material.

5. A lubricant dispenser including a body of lubricant and a rigid support therefor having a discharge aperture for discharge of said lubricant therethrough upon application of pressure to the lubricant of said body, means for applying said pressure comprising a material responsive upon a change in the moisture content thereof to a change in its dimension, said material being operatively associated with said body for applying pressure to the lubricant of said body upon said change in the moisture content thereof and the resulting change in the dimension of said material, and means for holding said material in its

operative association with said body for applying said pressure to the lubricant of said body.

6. A lubricant dispenser comprising; a body of lubricant, a rigid support for said lubricant having a discharge aperture for discharge of said lubricant therethrough upon application of pressure against said body, a cellulose material responsive upon a change in the moisture content thereof to a change in its dimension, said material being operatively associated with said body for applying pressure to the lubricant of said body, upon a change in the moisture content thereof and the resulting change in the dimension of said material, and means for holding said material in its said association with said body, said last mentioned means including said support and a clamp for clamping said material to said support with said material extending over said body of lubricant.

7. A lubricant dispenser comprising; a base member

having a discharge aperture for discharge of said lubricant therethrough, a body of lubricant on said base member disposed over said aperture, a moisture saturated cellulose material shrinkable in size upon drying said moisture anchored to said base member around said aperture, the moisture in said material being vaporizable in contact with air and shrinkable in its dimension upon said vaporization, whereby pressure will be applied to said body for discharge of the lubricant therefrom.

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