Jan. 11, 1938. J. C. MORROW 2,104,904

TIP

Filed March 27, 1936

Fig. 1

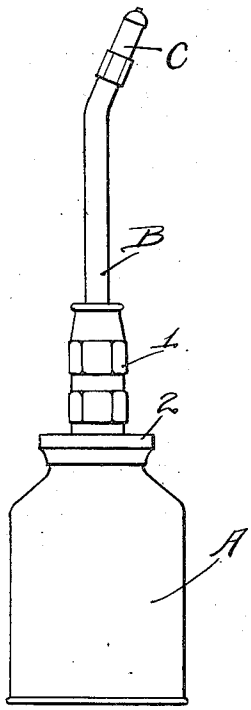


Fig. 2

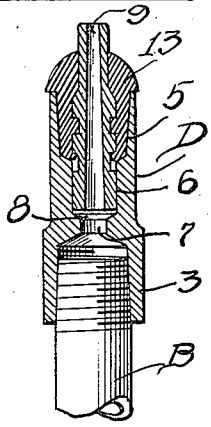


Fig. 3

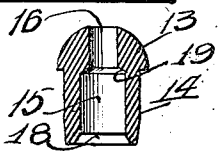


Fig. 4

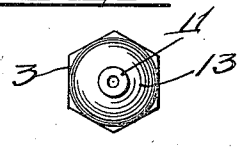
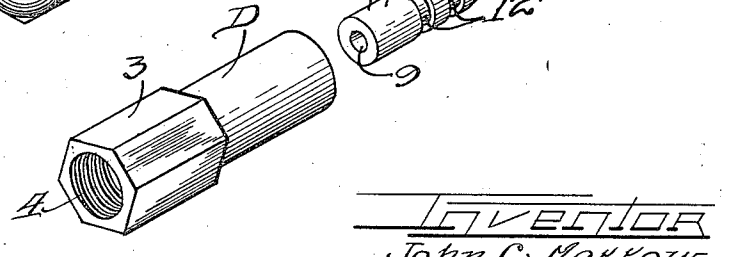


Fig. 5



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2,104,904

TIP

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Application March 27, 1936, Serial No. 71,094

10 Claims. (Cl. 285—161)

The present invention relates to a tip and more particularly to a tip or attachment for the spout of an oil lubricator for sealing an oil orifice when the lubricator spout is applied to the orifice for lubrication purposes.

In connection with high pressure oil lubrication, it is necessary, when lubricating, to seal an oil orifice to prevent the oil being displaced outwardly through the orifice thus leaving a dirty orifice, and also to insure that the oil enters the orifice and reaches the part or parts to be lubricated.

The present invention is directed to a novel tip or attachment for oil lubricators, and has for an object the provision of such a tip which may be economically manufactured, and which is highly efficient in service.

Another object of the present invention is to provide a tip or attachment for the spout of an oil lubricator which includes an oil seal member which is compressed against an oil orifice for sealing the orifice during lubrication, and the construction of the metal parts of the tip is such that these parts may be readily manufactured on suitable machinery in quantity lots, thus reducing the cost of manufacture of the tips.

The present invention resides in the combination, construction and arrangements of parts illustrated in the accompanying drawing, and while there is therein shown a preferred embodiment, it is to be understood that the same is susceptible of modification and change without departing from the spirit of the invention.

Generally speaking the tip of the present invention includes three component parts: (1) a metallic sleeve adapted at one end for connection to the lubricator spout, and open through its interior with bores of different sizes; (2) a pilot pin which is hollow for oil passageway and which has a portion of its length constructed as a cylinder of such diameter as to fit one of the bores of the sleeve and the balance of its length of reduced diameter and constituting the extremity of the pin; and (3) an oil seal of oil resistant material which is resilient and compressible and is constructed somewhat like a mushroom with a skirt portion and a head portion and provided with interior openings of different sizes.

An embodiment of the present invention is illustrated in the accompanying drawing and the views thereof are as follows:

Figure 1 is an elevational view of a high pressure oil lubricator provided with a tip of the present invention.

Figure 2 is an axial sectional view through a tip constructed in accordance with the principles of the present invention and showing it applied to the extremity of a lubricator spout, the spout being fragmentally shown in elevation.

Figure 3 is an axial sectional view through the oil seal.

Figure 4 is an end view of the tip looking at the top of Figure 2.

Figure 5 is a perspective view of the three constituent parts employed in constructing the tip of the present invention.

The drawing will now be explained.

Figure 1 illustrates a high pressure oil lubricator of the general type disclosed in United States Letters Patent to E. H. Morrow, No. 1,863,911 dated June 21, 1932.

The lubricator includes a body A, a spout B comprising a part which is a casting 1 suitably secured to a cap 2 which latter is threaded to the neck of the opening of the body A.

Shown attached to the extremity of the spout B is a tip or attachment C of the present invention.

The tip or attachment of the present invention includes three component parts, shown in perspective in Figure 5 and comprising a sleeve D, a passaged or hollow pilot pin E and an oil seal F.

The sleeve D is herein illustrated as having a polygonally formed end 3 for receiving a wrench or other suitable tool to secure the sleeve to the lubricator spout B. The interior of the portion 3 is threaded at 4.

In this respect it may be understood that the sleeve could be constructed so as to threadedly engage the interior of a spout extremity as well as the exterior here shown

The balance of the sleeve D is open through its interior and bored to form portions of different diameters. The endmost bore, that is, the bore adjacent the end remote from the polygonal portion 3 is of maximum diameter with the wall defining the bore being convergent inwardly, as at 5. This bore communicates with a cylindrical bore 6 which in turn communicates with a bore 7 of minimum diameter. The interior portion of the sleeve between the bores 6 and 7 forms an inclined shoulder 8.

The pilot pin E is hollow throughout its length to provide oil passageway 9; preferably this passageway is tapered from the inner end to the outer end of the pin. The exterior of the pin E, for a greater portion of its length is formed as a cylinder 10 with the balance of the portion of the

length of the pin being of reduced diameter as 11. The reduced end 11 of the pin is the outer end of the pin when assembled in the sleeve and constitutes a pilot for insertion in an oil hole or orifice when the lubricator is thereto applied for lubrication purposes. The cylindrical portion 10 of the pin may have one or more grooves 12 formed in it for a purpose to be later explained.

The oil seal F is made of resilient oil resistant material so as to have its head 13 compressible when applied to an oil orifice. The oil seal F is formed with a skirt 14 and a substantially semi-spherical head 13. Preferably the exterior of the skirt is slightly convergent in a direction away from the head 13, to conform to the wall of the bore 5 of the sleeve when the parts are assembled. The oil seal F is hollow having openings of different sizes, the opening 15 in the skirt being greater than the opening 16 through the head. The opening 15 is of such size as to snugly fit over the cylindrical portion 10 of the pilot pin while the diameter or size of the opening 16 is such as to snugly fit over the reduced end 11 of the pilot pin. Preferably the end of the skirt portion 17 is reduced in thickness by means of an undercut 18 formed in the seal at the time of its manufacture.

The diameter of the cylindrical bore 6 of the sleeve and of the cylindrical portion 10 of the pilot pin is such as to cause the pin to tightly fit the bore so that when the parts are assembled they are retained in assembled relationship by a friction fit.

The parts are assembled as follows:

The oil seal F is applied over the pilot pin E by passing the reduced end 11 of the pin through the opening 16 in the head of the oil seal until the shoulder between the portions 10 and 11 of the pin rest against the shoulder formed between the openings 15 and 16 in the oil seal. The pin with the oil seal on it is then inserted in the open end of the sleeve D and the pin is driven home until the inner end thereof backs the shoulder 8 within the sleeve. Because of the size of the diameters of the bore 6 of the sleeve and the portion 10 of the pin the pin is tightly fitted and held in position within the sleeve. As the pin is driven home, the skirt 14 of the oil seal member is compressed between the pin and the sleeve thus forcing portions of the sleeve into the grooves 12 of the pin, as may be observed in Figure 2, thus securely locking the oil seal in place and preventing displacement in service.

The parts are so constructed that when assembled the extremity of the portion 11 of the pin projects a slight distance beyond the outer surface of the head 13 of the oil seal to thereby serve as a pilot for entering an oil orifice and the tip or attachment is thereto applied for lubrication purposes.

The oil seal being compressible or resilient is compressed when pressure is applied against the oil orifice by pushing the lubricator towards or against the orifice thereby effectively sealing the oil orifice against escape of oil during lubrication.

The parts D and E may be readily manufactured, on high speed machinery, of suitable metal, such as brass or steel or other suitable material, in quantity lots while the oil seals may be readily molded also in quantity lots.

The manner of assembling the various parts is one that requires very little effort or time so that complete tips or attachments, of the present invention, may be turned out in large quantities at minimum labor cost.

The provision of the thin extremity 17 of the skirt 14 of the oil seal causes it to be deflected into one of the grooves 12 of the pilot pin when the parts are assembled, as may be observed in Figure 2.

It will be observed that the tip of the present invention is one which may be readily manufactured and assembled at minimum cost thus enabling ready sale at nominal prices.

The assembly of the parts of the tip, in the manner herein described, prevents any lubricant backing up between the interior of the oil seal and the exterior of the pilot pin. In use, the head 13 of the seal is compressed, when applied to an oil orifice, which forces the shoulder 19 of the seal tightly against the shoulder 20 of the pilot pin and thus effectively and positively prevents oil passage between them.

The manufacture of the pilot pin, from steel, prevents accidental closure of the pin extremity, which might arise if the tip were too forcibly applied to an oil orifice, or when the pin is initially driven into the sleeve D.

Making the sleeve D, as described, eliminates any breakage of the tip, if subjected to sidewise abuse.

The invention has been described herein more or less precisely as to details, yet it is to be understood that the invention is not to be limited thereby, as changes may be made in the arrangement and proportion of parts, and equivalents may be substituted, without departing from the spirit and scope of the invention.

The invention is claimed as follows:

1. A tip for attachment to a lubricator spout, said tip including a sleeve having one end arranged for threaded connection to a lubricator spout, a pilot pin frictionally retained within and against said sleeve and having a portion projecting beyond the other end of said sleeve, an oil seal member of resilient material having a skirt within the sleeve and wedged between the sleeve and pin and having a head overlying the other end of the sleeve and surrounding the projecting portion of said pin inwardly of its extremity, the said sealing head being compressible when applied to an oil orifice for sealing an orifice during lubrication.

2. A tip for a lubricator spout, including a sleeve adapted to be connected to a spout, a passaged pilot pin frictionally retained within and against said sleeve and having a portion projecting beyond one end of the sleeve, and an oil seal member having a skirt clamped within the sleeve by said pin outwardly of the zone of frictional engagement of the pin and sleeve and having a head overlying said one end of the sleeve and surrounding a part of the projecting portion of the pin.

3. A tip for a lubricator spout, including a sleeve adapted to be connected to a spout, a passaged pilot pin frictionally retained within and against said sleeve and having a portion projecting beyond one end of the sleeve, and an oil seal member having a skirt clamped within the sleeve by said pin outwardly of the zone of frictional engagement of the pin and sleeve and having a head overlying said one end of the sleeve and surrounding a part of the projecting portion of the pin, said pin having a depression into which a portion of the seal skirt is forced by the clamping action of the pin within the sleeve to prevent displacement of the seal member.

4. An attachment for a lubricator discharge spout, comprising a sleeve open from end to end and having one end adapted for threaded connection to a spout, a pilot pin open from end to end and having one end adapted for frictionally fitting within and against the sleeve and its other end projecting beyond the other end of the sleeve, a hollow oil seal member of resilient material having a skirt entered within the other end of the sleeve and surrounding said pin outwardly of the zone of frictional engagement of the pin and sleeve and having a semi-spherical head overlying said other end of the sleeve and surrounding a portion of the projecting end of the pin, the portion of said projecting end of said pin beyond the seal head serving as a pilot for applying said spout to an oil orifice, and said head being compressible to seal the oil orifice during lubrication.

5. An attachment for a lubricator discharge spout comprising a sleeve open from end to end and having one end adapted for threaded connection to a spout, a pilot pin open from end to end and having one end enlarged and adapted for frictionally fitting within said sleeve and its other end of reduced diameter and projecting beyond the other end of the sleeve, a hollow oil seal member of resilient material having a skirt entered within said other end of the sleeve and surrounding the portion of reduced diameter of said pin and having a semi-spherical head overlying said other end of said sleeve and surrounding a portion of the projecting end of said pin, the contacting surfaces of said skirt and sleeve being convergently inclined inwardly from said other end of the sleeve to wedge the skirt between the sleeve and pin when the parts are assembled.

6. A tip or attachment for a lubricator discharge spout, comprising a sleeve having one end adapted for connection to a spout and having its other end formed with an outwardly divergent tapered interior, a hollow pilot pin within said sleeve providing oil passageway and having an inner end portion adapted to frictionally fit within said sleeve inwardly of the said tapered end portion, and an oil seal member of resilient material having a part wedged between the sleeve and pin and having a part overlying the other end of the sleeve and about the pin, said latter part being compressible to seal an oil orifice during lubrication.

7. An attachment for a lubricator discharge spout, comprising a pilot pin having passageway from end to end and having portions of different external sizes, a sleeve having one end adapted to be connected to a lubricator spout and having a hollow interior formed by portions of different sizes, one of the interior portions of said sleeve being adapted to receive the larger portion of said pin with tight fit to prevent separation of the pin and sleeve, another of the interior portions of said sleeve being divergently tapered from said one interior portion to the other end of the sleeve, and an oil seal member of resilient material having a skirt wedged between the smaller portion of said pin and the tapered portion of said sleeve and having a compressible sealing head overlying the said other end of the sleeve and about the pin, the outer extremity of the smaller portion of said pin extending outwardly beyond said seal member to serve as a pilot for applying said tip to an oil orifice.

8. An attachment for a lubricator discharge spout, comprising a passaged pilot pin having one end formed as a cylinder of one diameter and its other end as a cylinder of less diameter, a sleeve having an internal cylindrical bore to receive the cylindrical portion of larger diameter of said pin with a tight fit, said sleeve having a tapered interior which diverges outwardly from said cylindrical portion, the pin portion of less diameter extending through said tapered portion of said sleeve and projecting beyond the outer end of the sleeve, and an oil seal member of resilient material having a skirt portion wedged between the tapered portion of the sleeve and the cylindrical portion of less diameter of the pin, said oil seal member having a head overlying the outer end of said sleeve and surrounding a part of the projecting portion of said pin.

9. A tip or attachment for a lubricator discharge spout, comprising a sleeve having one end adapted for connection to a spout and having its other end formed with an outwardly divergent tapered interior, a hollow pilot pin within said sleeve providing oil passageway and having an inner end portion adapted to frictionally fit within said sleeve inwardly of the said tapered portion thereof, and an oil seal member of resilient material having a part wedged between the tapered portion of the sleeve and said pin and having a part overlying the other end of the sleeve and about the pin, said latter part being endwise compressible to seal an oil orifice during lubrication, and said pin and seal skirt being wedged within the tapered portion of the sleeve by a driven fit.

10. A discharge tip for a high-pressure lubricator, comprising a skirted sealing member having a head of yieldable material, a passaged pin extending endwise through said member and having a portion outwardly of said head and constituting a pilot, and a sleeve about and in contact with another portion of said pin and about and in contact with a part of said member inwardly of said head, said sleeve being provided with means for connecting it to a lubricator.

JOHN C. MORROW.