WIDE FLOW-RANGE LUBRICANT DISTRIBUTOR

CROSS-REFERENCE TO RELATED APPLICATION

This is a continuation-in-part of our application Ser. No. 06/060,423, filed July 25, 1979, now abandoned.

BACKGROUND OF THE INVENTION

This invention relates generally to a lubrication distributor of the type used to transport a lubricant, such as oil, to a plurality of points requiring lubrication. More particularly, the invention relates to an oil distributor which provides a wide range of flow rates of oil to complex machinery such as knitting machinery.

In the past, lubrication of equipment such as knitting machinery has been accomplished by the user of mist-oil lubrication systems. In such lubrication systems, lubricating oil is suspended as an aerosol in a stream of air and is carried in this state through a tube or other enclosed channel to a remote location requiring continuous lubrication. The oil is generally placed in the aerosol state at a central oil-mist source, each central oil-mist source being connected to a plurality of transmitting tubes for the simultaneous and continuous lubrication of a plurality of locations on a single machine or group of machines. The aerosol or oil fog is created by a venturi, large droplets being removed from the air-oil stream by impinging the stream against a baffle. The fog remaining in a chamber or manifold is carried to the point of lubrication by the flow of the air portion of the stream.

The known mist-oil lubrication systems, while producing satisfactory lubrication, have proved deficient in several respects, namely, the range of oil volume deliverable to lubrication points is limited, and uniform delivery of oil to a plurality of points over a range of volumes has proved difficult.

What is needed is a lubrication system that distributes a wider range of volumes of lubricant uniformly to a plurality of points for lubrication.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the invention, a distributor for feeding a lubricant is provided including lubricant supply means having an outlet, lubricant transmission means having an inlet spaced from said outlet by a gap, said lubricant supply means being adapted to project a pressurized lubricant stream from said outlet across said gap, and means supporting said lubricant transmission means inlet so that said transmission means inlet faces and is at least in part in the path of at least a portion of the lubricant stream, so that interference by lubricant from said stream not directly impinging on said lubricant transmission means inlet of the flow of lubricant into said inlet is substantially limited.

Specifically, the flow of excess lubricant into said lubricant transmission means inlet is essentially prevented. Such prevention may be achieved by providing paths for the run-off of excess lubricant and by positioning the inlet so that it projects from the support thereof. Where two or more lubricant transmission means are provided, the supporting means can position the inlets thereof so as to be in the path of equivalent portions of the lubricant stream, so that essentially uniform flow is created in said lubrication transmission means.

Said lubricant supply means may be adapted to produce an essentially conical lubricant stream, two lubrication transmission means inlets positioned in essentially uniform spacing from said outlet and from the axis of the conical stream receiving essentially uniform quantities of lubricant. The lubrication stream may be a pressurized air-oil stream. Means may be provided for selectively varying the volume of lubricant in the stream for selective variation of the volume of lubricant flowing into said lubrication transmission means inlets.

The excess lubricant from said lubricant stream not entering said lubrication transmission means inlets may be returned to a reservoir forming a part of the lubricant supply means. In an alternative embodiment, the excess lubricant is fed directly to the lubricant stream forming portion of the lubricant transmission means and not returned to the reservoir.

Accordingly, it is an object of this invention to provide an improved lubricant distributor which delivers oil fog and a series of droplets of different micron size propelled by air to a plurality of remote points requiring lubrication.

Another object of this invention is to provide an improved lubricant distributor which delivers lubricant at rates which are variable over a wide range of flow.

A further object of this invention is to provide an improved lubricant distributor which provides auxiliary supplies of lubricant delivered at rates differing from the rates in the primary delivery system.

Still another object of this invention is to provide an improved lubricant distributor which provides substantially equal quantities of lubricant simultaneously to a plurality of remote points.

A further object of this invention is to provide delivery of lubricant to a plurality of points, the volume of lubricant delivered to said points being varied over a wide range.

Yet another object of this invention is to provide an improved lubricant distributor wherein flowback of undelivered lubricant does not interfere and affect the rate of flow of outgoing lubricant.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the constructions hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWING

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawing, in which:

FIG. 1 is an elevational view, partly in section and partly cut away, of the lubricant distributor of this invention;

FIG. 2 is a top view of the lubricant distributor of FIG. 1;

FIG. 3 is a sectional elevational view taken along line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 2;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 1;

FIG. 6 is a bottom view taken along line 6—6 of FIG. 3;