March 29, 1932. E. F. TERRY 1,851,602

AIR LINE OILER

Filed Aug. 14, 1930

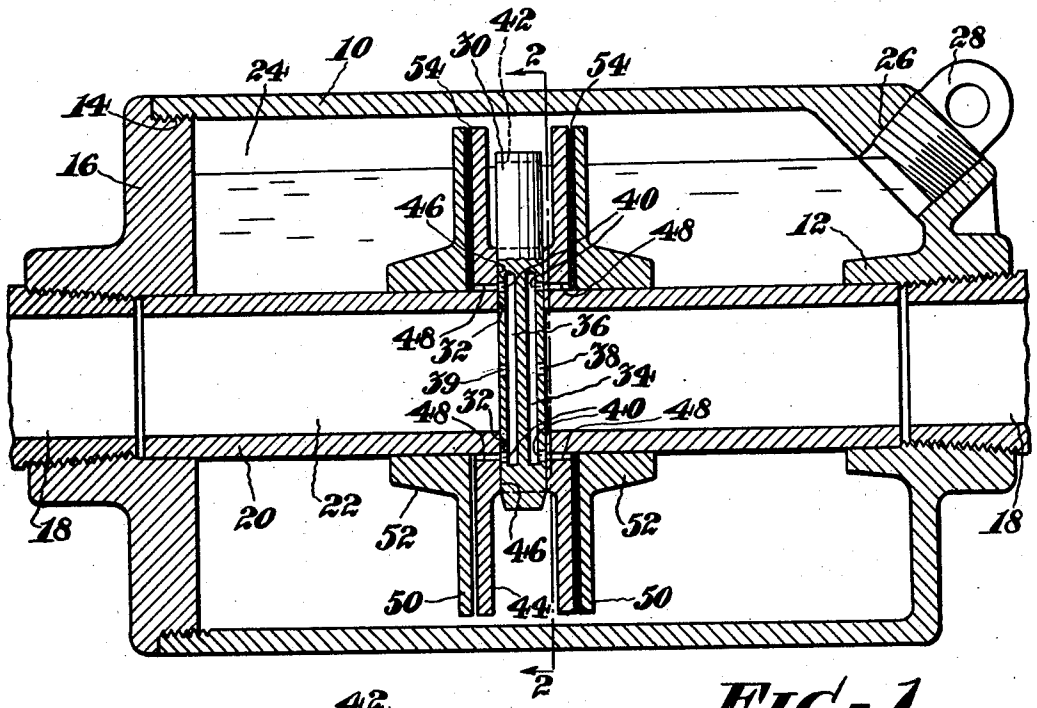

FIG.-1.

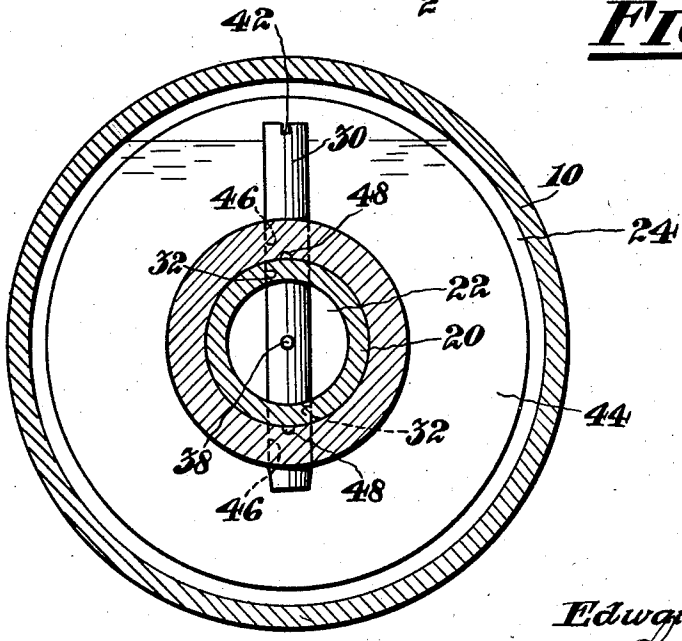

FIG.-2.

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UNITED STATES PATENT OFFICE

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AIR LINE OILER

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This invention relates to oiling devices and has particular reference to an air line oiler adapted to be attached to a pressure fluid supply line leading from a source of supply to a fluid actuated machine, such as a rock drill or the like.

An object of the invention is to supply lubricant in suitable quantities and in a properly atomized state to the working parts of a fluid actuated rock drill or other machine thus actuated, through the agency of the pressure fluid flowing through the supply line.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawings wherein similar reference numerals designate corresponding parts throughout,

Figure 1 is a sectional elevation of an oiler constructed in accordance with the practice of the invention, and

Figure 2 is a transverse view taken through Figure 1 on the line 2—2 looking in the direction indicated by the arrows.

Referring to the drawings, 10 designates a casing which, in this instance, is of cup shaped form having a hollow projection 12 in its closed end. The open end of the casing 10 is threaded as at 14 for the reception of a head 16 and threadedly engaging the head 16 and the hollow projection 12 of the casing are sections 18 of an air line through which pressure fluid is conveyed to the machine intended to be actuated.

Extending through the interior of the casing 10 and secured at one end in the head 16 and at the other end in the hollow projection 12 is a tubular member 20 which divides the casing into a passageway 22 for pressure fluid and a reservoir 24 for oil. The oil may be admitted into the reservoir 24 through an opening 26 in the casing and this opening may be normally sealed by a plug 28.

Suitable means are provided for admitting pressure fluid into the reservoir 24 to create a pressure on the surface of the oil and also for conveying oil in a suitably atomized state from the reservoir into the passageway 22. To this end a plug member 30 is preferably positioned across the passageway 22 by extending through diametrically opposed apertures 32 in the tubular member 20. The apertures 32 are preferably located in the tubular member 20 so that the plug 30 will be positioned midway between the head 16 and the closed end of the casing 10 when the parts are assembled.

The plug 30 is provided with a pair of longitudinally extending passages 34 and 36 and to provide communication between these passages and the passageway 22, ports 38 and 39 are formed in the plug in such position that they will lie on the axis of the tubular member 20 when the plug 30 is in position therein. The passages 34 and 36 are also adapted to communicate with the reservoir 24 and to this end ports 40 are formed in the plug 30 at each end of the passages 34 and 36. The ports 40 are preferably located in the plug 30 so that they will lie on either side of the tubular member 20 adjacent its periphery when the plug is in position therein. To indicate the position of the ports relative to the tubular member 20, a slot 42 may be formed in one end of the plug 30 and this slot 42 may also serve to rotate the plug in the tubular member 20 before assembly in the casing 10.

To insure delivery of the oil in a suitably atomized state to the passageway 22, the oil in the reservoir is preferably separated into a thin film before being conveyed to the passageway. Accordingly, a double sided plate 44, which may be a sliding fit on the tubular member 20, is positioned thereon and maintained against rotation and longitudinal movement by means of the plug 30 extending through suitably formed apertures 46 therein. The plate 44 is also provided with passages 48 arranged in such position relative to the apertures 46 that they will communicate with the ports 40 in the plug 30. On either side of the plate 44 are side plates 50 which may be secured to the tubular member 20 in any suitable manner, such as by press fitting, and to this end having projections 52 formed thereon to insure a substantial bearing surface.

The side plates 50 are preferably arranged on the tubular member 20 in such close relation to the central plate 44 that there will be

but a slight clearance, as at 54, between these members so that the oil entering the spaces 54 between the plates will be of substantially film-like form.

The operation of the device is as follows: With the oiler connected to the pressure fluid supply line 18 so that the air will enter, for instance, at the head 16 and will flow towards the projection 12, a portion of the air will enter the port 39 and pass through the passage 36, ports 40 and passages 48 to enter the reservoir 24 through the space 54 between the plates 44 and 50.

The pressure fluid thus entering the reservoir will create a pressure therein equal to the pressure in the main supply line. If then the machine, such as a rock drill which is intended to be operated, is set in operation, the fluctuations in pressure due to the admission and cut-off of pressure fluid in the rock drill will result in a corresponding fluctuation in the reservoir 24. These pulsations transmitted to the oil in the reservoir will cause a certain amount of this oil to enter the passage 34 in the plug and escape through the port 38 into the passageway 22, from whence it will be carried by the pressure fluid therein to the machine intended to be lubricated.

It will, however, be apparent that the oil which passes into the passageway 34 must first pass through the space 54 between the plates and be reduced to a film-like form. This film of oil will be readily atomized by the pressure fluid and in such state will be carried to the machine intended to be lubricated. It will be apparent that when the pressure fluid is flowing in the direction described, there will be created an area of low pressure around the port 38 which will facilitate the exit of pressure fluid and oil from the reservoir to join the pressure fluid flowing through the passageway 22.

From the foregoing it will be seen that simple and economical means have been provided for carrying out the objects of the invention and that oil in suitable quantity and form will be supplied to a rock drill or like device by the interposition of the oiler in the fluid supply line of such machines.

I claim:

1. An air line oiler comprising a casing having a passageway for pressure fluid and a reservoir for oil, and a plurality of plates extending laterally through the reservoir and being separated one from the other to provide open passages in the reservoir around the passageway for conveying pressure fluid from the passageway to the reservoir and oil from the reservoir to the passageway.

2. An air line oiler comprising a casing having a passageway for pressure fluid and a reservoir for oil, a pair of side plates in the reservoir, and a center plate between said side plates and separated therefrom to provide open passages around the passageway, said center plate having passages communicating with said open passages for conveying pressure fluid from the passageway to the reservoir and oil from the reservoir to the passageway.

3. An air line oiler comprising a casing having a passageway for pressure fluid and a reservoir for oil, a plug member in the passageway having ports and passages therein affording communication between the passageway and the reservoir, and a plurality of plates in the reservoir separated one from the other to provide open passages around the passageway communicating with the ports and passages in the plug for conveying pressure fluid from the passageway to the reservoir and oil from the reservoir to the passageway.

4. An air line oiler comprising a casing having a passageway for pressure fluid and a reservoir for oil, a plug member in the passageway having ports and passages therein affording communication between the passageway and the reservoir, a pair of side plates in the reservoir, and a center plate between the side plates and separated therefrom to provide open passages around the passageway, said center plate having passages communicating with said open passages and with the ports and passages in the plug for conveying pressure fluid from the passageway to the reservoir and oil from the reservoir to the passageway.

In testimony whereof I have signed this specification.

EDWARD F. TERRY.