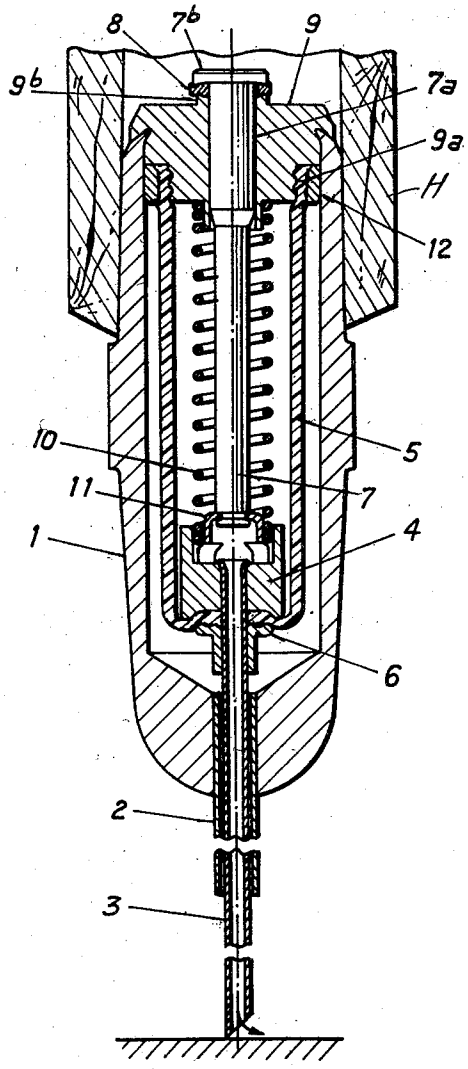
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PRESSURE-ACTUATED OILER WITH CAPILLARY TUBE

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PRESSURE-ACTUATED OILER WITH CAPILLARY TUBE

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This invention relates generally to oil dispensing devices.

Pressure-actuated oilers designed for oiling machine parts are known in many technical fields, in particular in precision machines. Conventional oilers of this type are provided with a flexible and compressible hollow container, which is filled with oil and connected to a capillary tube. For ease of handling, the oiler with capillary tube is attached to the front end of a fountain-pen type holder which forms the oil tank or reservoir proper. This oil reservoir is normally connected to the compressible container via a valve designed to open when the capillary tube is displaced so that as oil is withdrawn from the container, the latter is again refilled from the reservoir.

Oilers of this type hitherto known display the disadvantage that it is impossible to remove an oil drop by suction through the capillary tube once it has been dispensed. Since it is comparatively common for the oil drop dispensed to be too large, i. e. for too much oil to be applied to a certain location, the surplus oil must be removed entirely or in part which is usually very awkward and complicated. Furthermore, oilers of the known type are frequently leaky so that drops are accidentally dispensed from the capillary tube, which is also undesirable.

It is one of the objects of the present invention to provide means obviating said disadvantages in oilers, whereby oil may now be removed by suction. The oiler according to this invention is characterized by the fact that a longitudinally displaceable plunger is equipped with an elongated cylindrical valve seat co-operating with the valve bore in a plug, and a plate-type head co-operating with a face of the said plug and that the longitudinally displaceable capillary tube connected to the flexible, collapsible container is operatively connected to the valve plunger while said plunger is held in closing position by means of a spring so that the cylindrical valve remains closed over a certain displacement path of the capillary tube and for a predetermined deformation of said collapsible container corresponding to the said path.

The drawing illustrates by way of example, an embodiment of the oiler according to the present invention.

The reference numeral **1** designates a hollow body inserted in the end of a holder partly shown at H, the free end of which body is provided with a guide bush **2**. A longitudinally displaceable capillary tube **3** is slidable in this guide bush **2**, the end of said tube **3** being arranged in the body **1** and carrying a bush **4**. Between bush **4** and flange **6** of guide bush **2** there is positioned the end of a flexible and collapsible container, hereinafter sometimes called lung **5**, which communicates with the capillary tube, the latter being made from a deformable plastic material.

The open end of the said lung **5** is attached between the shoulder **9***a* of a plug **9** closing the body **1** and a ring

12. Centred in the bush **4** over a yoke-type extension **11** is one end of a valve plunger **7** while the other end is equipped with an elongated cylindrical valve seat **7***a* and a plate-type head **7***b*. The head **7***b* co-operates with the conical face of the shoulder **9***b* of the plug **9** through a seal **8** formed of elastic material while the valve seat **7***a* co-operates with the valve bore in the plug **9** in which the valve plunger **7** is arranged so as to be longitudinally displaceable. Between the plug **9** and the extension **11** is centred and supported a pressure spring **10** around the valve plunger **7**. The oiler operates as follows:

If oil is to be dispensed, the capillary tube **3** is applied to the location to be oiled and the oiler body depressed so that the resulting deformation of the lung **5** partially displaces and forces the oil out of the capillary tube. With a displacement smaller than the length of the valve seat **7***a*, the connection between the lung and the oil tank in the holder remains closed. When the oiler body is lifted off, the capillary tube returns to its original position under the pressure of the spring **10**. According to whether the face of the capillary tube fully or partially rests on the location to be oiled, oil or air is drawn into the capillary tube when the lung is retracted to its original shape.

When the displacement is larger than the length of the valve seat **7***a*, an annular passage is opened between the oil tank above plug **9** in the holder and the flexible and collapsible container **5**. The pressure of the oil in the tank and the air pressure, respectively, act on the oil held in the container **5** so that the oil will be dispensed from capillary tube **3** without further deformation of said container. A corresponding amount of oil simultaneously flows into the lung from the oil tank or reservoir until the valve **7***b*, **9***b* is closed when the oiler is lifted off the location to be oiled. Since the valve formed by the valve seat **7***a* is closed prior to the completion of the collapsible container or return movement of the lung **5** into its normal position, oil can always be drawn into the lung from the tank. The seal **8** between the plate-type head **7***b* and the conical face of shoulder **9***b* is resiliently deformed by the action of the spring **10** in the sealing position of the valve plunger **7** and thereby produces an air and liquid tight closure so that the oil held in the lung **5** cannot accidentally leak out owing to the capillary action of the tube **3**.

Having now particularly described and ascertained the nature of my present invention and the manner in which the same is to be performed, I declare that what I claim is:

1. A pressure actuated oiler having a capillary discharge tube for application to a location to be lubricated, comprising a longitudinally displaceable plunger, a plug having a shoulder and a bore which latter forms an elongated cylindrical valve seat for said plunger, said plunger cooperating with said valve seat to open and close same, a plate-shaped head forming one end of said plunger and adapted to cooperate with said plug shoulder, a flexible and collapsible container connected to said plug and to said discharge tube, said plunger extending through said container and said bore of said plug and having an end spaced from said discharge tube within said container, said capillary tube being operatively connected to said valve plunger for longitudinal displacement thereof, and a coil spring seated about said plunger and abutting against said plug and the other end of said plunger within said container, said valve plug being held in sealing position by the action of said spring so that the cylindrical valve seat remains closed over a predetermined distance of dis-

placement of said capillary tube and upon a deformation of said container corresponding to said distance.

2. An oiler according to claim 1, including a seal provided between said shoulder of the plug and said plate-shaped head of said valve plunger, which seal is formed of a resiliently deformable material.

3. An oiler according to claim 1, wherein said shoulder is provided with a central conical recess.

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