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OILER

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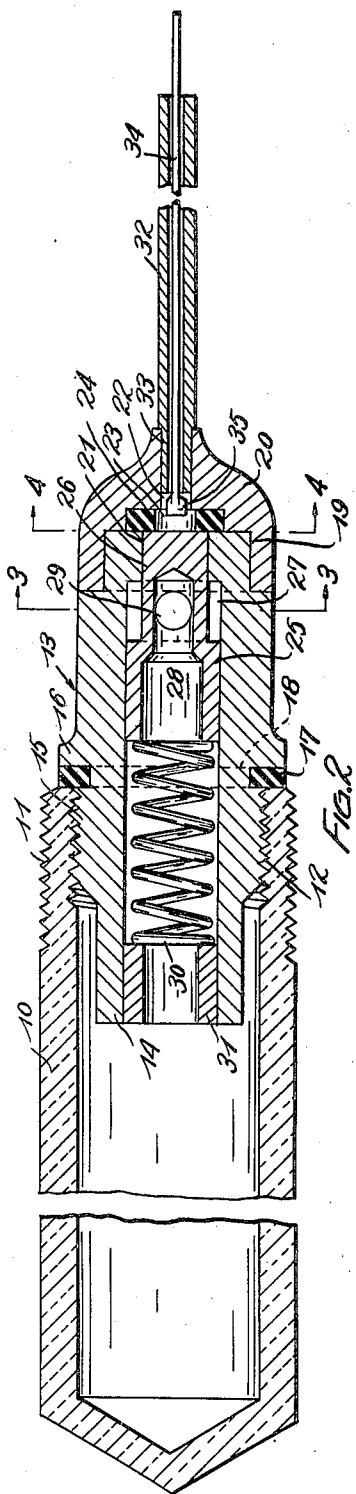
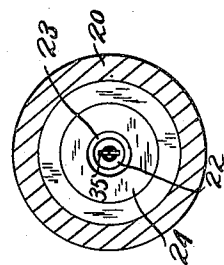
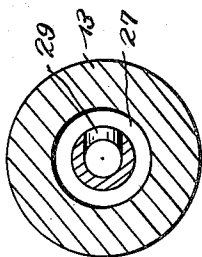


FIG. 2

FIG. 3

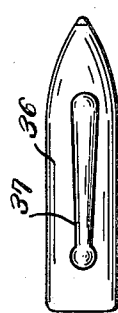


FIG. 4

FIG. 5

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OILER

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7 Claims. (Cl. 221—42)

This invention relates to an oiler; that is, to a device for depositing a drop of oil against a part to be oiled.

An object of the invention is to provide an improved and novel oiler which is simple in construction, is economical, can be conveniently used, and is precise in operation.

Another object is to provide an oiler which while useful for ordinary surface oiling is also extremely useful in oiling inaccessible or hard to reach places.

Another object is to provide an oiler which obviates the disadvantages of the ordinary oil can and which is economical in its use of oil, since it does not cause oil waste and does not deliver excess oil that subsequently smears or drips.

Another object is to provide an oiler which can be easily filled with oil and has a reservoir of sufficient capacity so that it does not require frequent refilling, particularly as no oil is wasted in use.

Another object is to provide an oiler wherein the oil supply can be maintained clean and free of foreign matter and will be visible at all times.

A still further object is to provide an oiler which does not leak oil when not in use, irrespective of the position in which the oiler is placed.

Another additional object is to provide an oiler which can be conveniently carried upon the person of the user, preferably in the manner of a fountain pen.

A still further and important object is to provide an oiler which is valve-controlled and wherein the valve is so constructed and related to the other parts of the oiler that it is positively and accurately guided to and from seating position and engages its seat with a large surface contact engagement, insuring an efficient and effective seal.

Further and additional objects and advantages not hereinbefore specified will become apparent hereinafter during the detailed description of an embodiment of the invention which is illustrated in the accompanying drawing wherein,

Fig. 1 is an elevational view of the oiler showing the removable cap separated therefrom.

Fig. 2 is a longitudinal sectional view through the oiler proper and on a much larger scale than Fig. 1, and

Figs. 3 and 4 are transverse sectional views taken substantially on lines 3—3 and 4—4 of Fig. 2 looking in the direction of the arrows.

An oiler, such as is illustrated and described herein, is susceptible of a wide variety of uses,

particularly in the oiling of parts of light machinery, such as may be employed in the home or in the office, as, for example, electric fans, vacuum cleaners, kitchen mixers, typewriters, adding machines, billing machines or other similar devices. The oiler also has additional utility as, for example, in the oiling of parts of guns, fishing reels or various other types of light machinery.

The oiler illustrated herein comprises a reservoir casing 10, preferably but not necessarily cylindrical, and formed of transparent material, such as glass, wherefore the oil in the reservoir will at all times be visible and thus the user can determine at a glance when it will be necessary to refill the oiler.

The reservoir 10 is permanently closed at one end, while its opposite end is open and is provided with external threads 11 and internal threads 12. The open end of the reservoir is closed by a member 13 which functions both as a closure plug for the reservoir and as a support for the valve of the oiler which will later be described.

The member 13 at its left-hand end, as viewed in Fig. 2, is provided with a reduced portion 14 adjacent which is a larger externally threaded portion 15 that terminates at an enlarged external annular flange 16 which provides a shoulder against which is located a sealing gasket 17 that is seated and retained in an annular groove 18 formed in the member.

The member 13 is secured to the reservoir 10 by screwing the extremely threaded portion 15 of the member into the internally threaded end 12 of the reservoir until the end of the reservoir and the flange 16 tightly clamp the gasket 17 to cause the reservoir and the member 13 at this point to constitute a leak-proof structure, it being noted that the reduced end 14 of the member 13 extends into the reservoir with clearance therearound.

The member 13 outwardly of the flange 16 is provided with an annular shoulder 19 upon which is preferably permanently mounted the inner end of a tip 20, the outer end of which is of general conical formation. The member 13 is substantially tubular and is open at its left-hand end, as viewed in the drawing, but is substantially closed at its right-hand end adjacent the shoulder 19. The closed end of the member 13 is provided with a centrally disposed opening 21 concentric with, but considerably less in diameter than the internal diameter of the member 13. The member 13 thus is provided with a bore

therethrough having a portion of relatively large diameter and a portion of relatively small diameter.

The tip 20 is provided with a longitudinally extending bore 22 that terminates at its inner end in a counterbore 23 in which is mounted a gasket 24 of suitable material such as rubber and constituting a valve seat, it being noted that the gasket 24 is in engagement with the right-hand end of the member 13 and overlies a portion of the opening 21 in the closed end of the member 13, as clearly indicated in Fig. 2.

As previously stated, the oiler is valve-controlled, and the valve is clearly illustrated in Fig. 2, and comprises a portion 25 of a diameter such as to have a sliding fit within the member 13 and a reduced portion 26 that extends through the opening 21 in the closed end of the member 13 and has a sliding fit therein and is provided with a flat end adapted to engage the overhanging portion of the gasket 24 and seat thereagainst to form a valve seal.

The valve, although slidable in the member 13, is accurately and positively guided in its sliding movements to and from seating position, it being noted that the large portion 25 of the valve contacts the interior of the member 13 over a large area and thus the stability of the valve during its operative movements is insured and there can be no chance of the valve wobbling or getting out of position, particularly with respect to the alignment of the smaller portion 26 with the opening 21.

Likewise, it will be noted that the contact between the portion 26 of the valve and the wall of the opening 21 in the member 13 is over a substantial area, thus providing an additional guide for the valve during its operative movements. In addition to engagement between the end of the valve and the gasket 24 is in the form of a large surface contact, thus eliminating likelihood of oil leakage and providing an effective seal.

The length of the reduced portion 26 of the valve is such that when the end of said portion is seated on the gasket 24 the large portion 25 of the valve is spaced inwardly from the closed end of the member 13, with the result that an annular chamber 27 is provided between the portion 26 and the inner wall of the member 13 and such chamber may be designated as an oil supply chamber.

The chamber 27 is in communication with the hollow interior 28 of the valve by means of one or more openings 29 formed in the reduced portion 26 of the valve. A valve spring 30 is mounted in the member 13 and has one end abutting the enlarged end of the valve and its opposite end abutting a bushing 31 mounted within the inner reduced end 14 of the member 13. It will be apparent that the spring 30 normally maintains the end of the portion 26 of the valve tightly in engagement with the gasket 24 so that no oil can pass into the counterbore 23 and thence into the bore 22 of the tip 20. A relatively small diameter tube 32 has its reduced end 33 secured in the bore 22 of the tip 20 and there is slidably and loosely mounted in the tube 23 a valve actuating pin 34 of greater length than the tube so that its opposite ends can project beyond each end of the tube. The inner end of the pin 34 is provided with fins 35 to retain the pin in position in the tube, with the opposite end of the pin projecting beyond the outer end of the tube or tip a predetermined distance which results in limiting the amount of inward movement that can be imparted to the pin when the tip is ap-

plied to a point to be oiled and, in turn, limiting the opening movement of the valve and controlling the quantity of oil discharged therefrom. The diameter of the pin 34 and the internal diameter of the tube 23 are so related that there is a predetermined free area through the tube between the pin and the tube and this area acts to control the quantity of oil discharged through the tube.

The oiler is provided with a closure cap 36 which fits over the member 13, tip 20, tube 32 and pin 34 of the oiler and is threadedly connected by means of interior threads with the externally threaded portion 11 of the reservoir 10. The cap 36 is provided with a suitable spring clip 37 whereby the oiler can be fastened in a pocket or to some other part of the clothing of the user and carried in a manner similar to that in which fountain pens and pencils are carried.

The reservoir 10 is filled with oil by unscrewing the member 13 and its associated parts from the reservoir and pouring the oil in the open end of the reservoir while the latter is in a vertical position. The member 13 and its associated parts are then screwed into assembled relation with the reservoir 10 and the oiler is ready for use.

When it is desired to apply oil to a spot or part to be oiled the user removes the cap 36 and preferably presses the same upon the closed end of the reservoir. He then puts the outer end of the pin 34 at the point at which he wishes to deposit a drop of oil and pushes down on the oiler to cause said pin 34 to move inwardly until it contacts with the end of the valve and moves the latter against the action of the spring 30 to cause the reduced portion 26 of the valve to slightly clear the opening 21 in the closed end of the member 13. The operator then releases the downward pressure on the oiler, whereupon the spring 30 returns the valve to seated position on the gasket 24 and moves the pin 34 relatively outwardly or downwardly, as the case may be, with respect to the tube 32. The return movement of the valve to seated position forces a small amount of oil from the oil supply chamber 27 ahead of the end of the reduced portion 26 of the valve through the opening 21 and into the counterbore 23 and tube 32, from which it passes through the tube and down the pin 34 to the spot or place to be oiled. In this way a measured and non-excessive amount of oil is positively forced out of the oiler upon each operation thereof and is deposited from the end of the pin 34 in the form of a drop of oil upon the spot or place to be oiled.

It will be observed that the tube 32 is of such length and of sufficiently small diameter to enable oil to be applied at inaccessible points.

It will also be noted that the stability of the valve, due to the large guiding areas of contact between it and the member 13, assures a proper seating of the valve at all times, although the pin 34 is loosely mounted in the tube 32 and is free to have a limited amount of wobbling movement in said tube.

The effective valve employed in the oiler is seated at all times when the oiler is not in use and, therefore, there is no likelihood of the oiler leaking at such times, not even if it is arranged in a downwardly inclined or vertical position. The fact that the valve is stable and that a relatively strong spring 30 firmly holds the valve in seated position, eliminates any danger of the valve being jarred from unseated position during

non-use, and causing a leakage of the oil. The oil supply chamber 27 being always in communication with the reservoir chamber through the opening 29, the counterbore 28 and the interior of the member 15 constantly has its supply of oil replenished from the reservoir chamber.

Although a preferred embodiment of the invention has been illustrated and described herein, it will be understood that the invention is susceptible of various modifications and adaptations within the scope of the appended claims.

Having thus described my invention I claim:

1. An oiler of the character described, comprising a reservoir, a member operatively associated with one end of said reservoir and having a bore therethrough in communication with said reservoir, a tip operatively associated with said member and having a bore therethrough in communication with the bore in said member, a valve seat in said tip, a slidable valve adapted to normally seat on said seat, a spring in said member and engaging one end of said valve and urging the same toward seated position, said valve having a reduced portion for engagement with said seat and an enlarged portion intermediate said reduced portion and said spring, and means carried by said tip for unseating said valve against the action of said spring.

2. An oiler of the character described, comprising a reservoir, a member operatively associated with one end of said reservoir and having a bore therethrough in communication with said reservoir, a tip operatively associated with said member and having a bore therethrough in communication with the bore in said member, a counterbore in said tip, a ring gasket in said counterbore, a spring-pressed slidable valve having an enlarged portion and a reduced portion with the end of the latter normally engaging said gasket with a surface contact, and means carried by said tip for moving said end of said latter portion of said valve away from said gasket.

3. An oiler of the character described, comprising a reservoir, a member operatively associated with one end of said reservoir and having a bore therethrough in communication with said reservoir, said bore having a portion of relatively large diameter and a portion of reduced diameter, a tip operatively associated with the outer end of said member and having a bore therethrough, a valve seat intermediate the tip bore and the portion of the bore in said member of reduced diameter, a spring-pressed slidable valve mounted in said member and having a portion slidably interfitted with the portion of the bore in said member of large diameter and a portion slidably interfitted with the portion of the member bore of reduced diameter, the end of said last named portion of said valve normally seating on said valve seat, and means carried by said tip and extending outwardly thereof for unseating said valve.

4. An oiler of the character described, comprising a reservoir, a member operatively associated with one end of said reservoir and having a bore therethrough in communication with said reservoir and formed of an elongated portion of relatively large diameter and a shorter portion of relatively small diameter, a tip operatively associated with the outer end of said member and

having a bore therethrough in communication with the portion of the member bore of relatively small diameter, a valve seat intermediate the member bore and the bore in said tip, a spring-pressed slidable valve in said member having an inner portion slidably fitting the first named portion of said member bore and another portion slidably fitting the portion of the member bore of relatively small diameter, the end of said last named portion of said valve being normally seated on said valve seat, said last named portion of said valve being of such length that when it is seated on the valve seat the first named portion of said valve is located inwardly of the outer end of said member a sufficient distance to provide an annular space between the wall of the bore of said member and the outer surface of the valve portion of relatively small diameter, said valve being provided with a recess communicating with the bore in said member and with an opening communicating with said recess and said chamber, and means carried by said tip and projecting outwardly thereof for unseating said valve.

5. An oiler of the character described, comprising a reservoir, a member operatively associated with one end of said reservoir and having a hollow interior communicating with said reservoir, a tip associated with the outer end of said member and in communication with the interior thereof, a valve seat intermediate said tip and the interior of said member, a spring-pressed valve in said member and normally seating against said seat, and a pin carried by said tip and separate from said valve and projecting beyond the outer end of said tip and acting when pressed inwardly of said tip to unseat said valve.

6. An oiler of the character described, comprising a reservoir, a member operatively associated with one end of said reservoir and having a hollow interior communicating with said reservoir, a tip associated with the outer end of said member and in communication with the interior thereof, a valve seat intermediate said tip and the interior of said member, a spring-pressed valve in said member and normally seating against said seat, and a pin carried by said tip and separate from said valve and of such diameter as to provide a predetermined free area between it and the tip to accurately control the quantity of oil discharged from the tip, said pin acting when pressed inwardly of said tip to unseat said valve.

7. An oiler of the character described, comprising a reservoir, a member operatively associated with one end of said reservoir and having a hollow interior communicating with said reservoir, a tip associated with the outer end of said member and in communication with the interior thereof, a valve seat intermediate said tip and the interior of said member, a spring-pressed valve in said member and normally seating against said seat, and a pin carried by said tip and separate from said valve and projecting a predetermined distance beyond the outer end of said tip and acting when pressed inwardly of said tip to unseat said valve a predetermined maximum distance thereby controlling the maximum quantity of oil which can be discharged from the tip.

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