

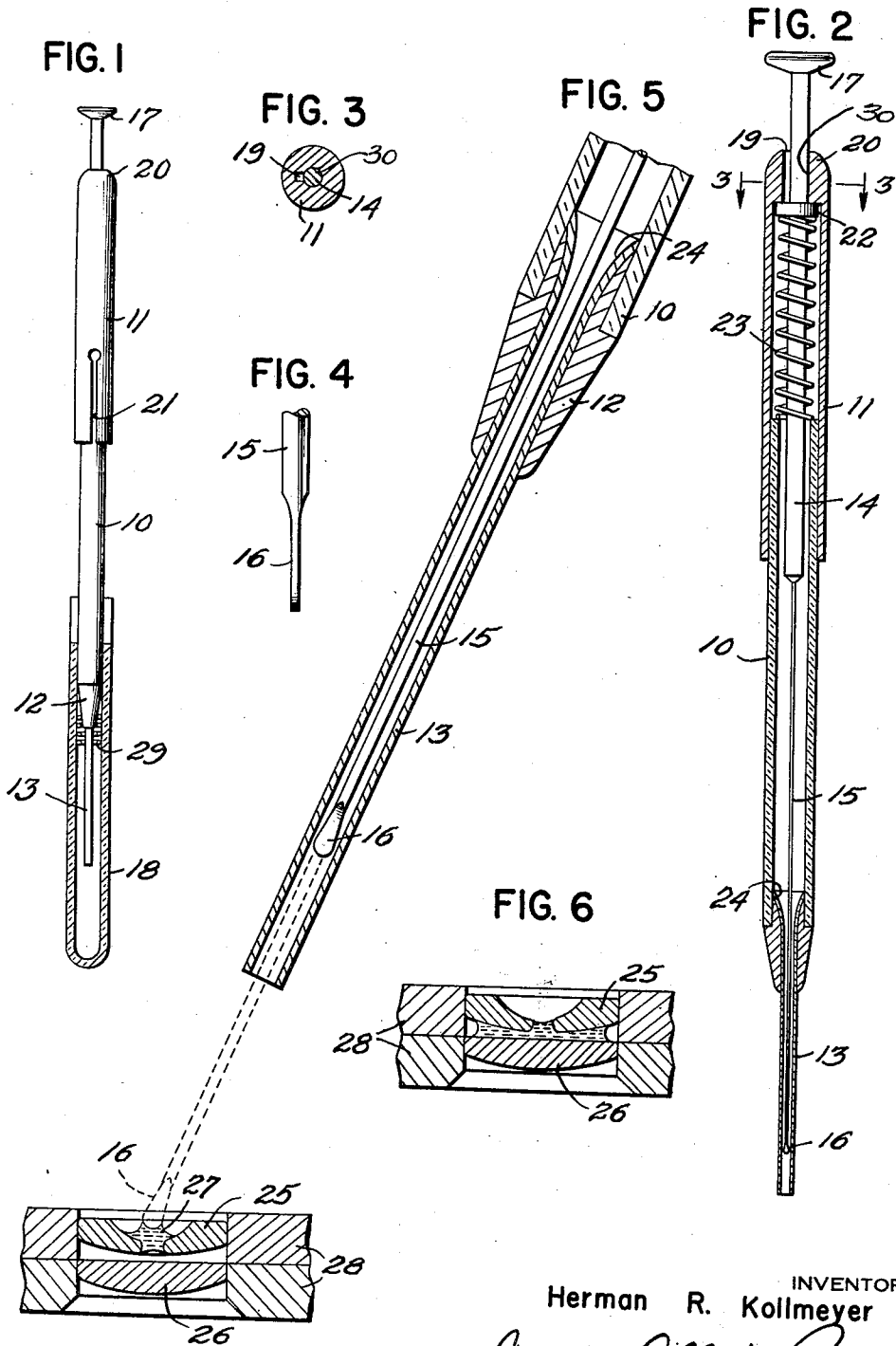
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H. R. KOLLMMEYER

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WATCH OILER

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INVENTOR.
Herman R. Kollmeyer
BY *Lorenz, Allen & Hornum*
ATTORNEYS.

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WATCH OILER

Herman R. Kollmeyer, Arlington, Va.

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This invention relates to improvements in watch oilers, particularly for oiling watch pivots and jewels. Every watchmaker knows the importance of getting fresh clean oil into a watch especially in the jewels. It is also of prime importance that the correct amount of oil be applied to each jewel. An oiler which picks up dirt when it is placed aside or which dispenses the same size drop of oil at each application is of course useless to gain these ends.

The primary object of my invention is to provide an oiler which will retain the advantages and overcome difficulties and disadvantages experienced with conventional methods of oiling watch parts. In one of these methods it has been the practice to place the oil needed for a day's work in a small cup, about the size of a dime, made of glass and mounted in a wood base with a cover to protect the oil from contamination by dust. The oiler itself is a wire set in a metal or plastic handle with a specially shaped tip usually gold plated. It also is fitted with a cover member to prevent dust from collecting on it. In use the watchmaker begins the day by throwing out any left over oil, then cleaning the cup and supplying it with fresh oil from a bottle. This must be done if fresh oil is to be had for the day's work. The oil does not stay fresh in the cup even with a cover on. To oil a watch the user must first remove the cover protecting the oiler, then the cover from the cup. Then he dips the oiler in the cup and touches it to the watch pivot. A small drop of oil is then placed in the watch jewel. On large pivots a larger oiler is used or the small one is dipped several times. This method consumes time and wastes oil. It also is not entirely satisfactory because the oil is not protected at all times from dust in the air since the cover is off the cup during the few minutes it takes to oil a watch.

A further method is a fountain oiler consisting of a capillary tube (usually metal) fixed in a glass tube four inches long and about one-eighth to one-quarter inch in diameter. The watchmaker draws a supply of oil directly from the bottle (soda straw style) and it is held in the oiler by capillary attraction. When oil is desired the part to be oiled is touched with the end of the metal tube. The disadvantage here is that the amount of oil deposited at each touching cannot be controlled and as a consequence over oiling is very often the result. They are very unsatisfactory on small ladies' watches since a tube small enough for these pivots is too fragile to be practical.

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In the oiler, made according to my invention, the oil is protected from contamination by dust up to the moment of its application to the pivot as in the fountain oilers. Yet the amount of oil placed in the pivot can be controlled exactly as it can in the wire type of oilers, and even with greater precision. Therefore, the advantage in using an oiler made in accordance with my invention is that the watchmaker can fill any size jewel quickly and with a controlled quantity of oil. The size of the drop of oil on the tip of the oiler is controlled by the speed with which it is forced out of the tube, the oiling being accomplished, not directly from the tube but from an oiler tip on a fine wire which carries the oil to be applied to the parts well beyond the end of the tube. A fast ejection causes a large drop to form, a slower ejection causes a smaller drop to form. Also if the drop is found to be too large it can be reduced in size by drawing the oiler tip back just to the mouth of the tube, capillary action will draw some of the oil from the tip onto the tube. Thus the exact amount of oil required can be controlled with precision by the watchmaker experienced in such work with a saving of time and protection of the oil against contamination by dust, as well as a saving of the watch lubricating oil as will appear more fully hereinafter.

Further objects, advantages and details of my invention will appear in the following specification supplemented by the accompanying drawings forming a part thereof and illustrating a highly satisfactory embodiment of an oiler in accordance with my invention.

In the drawings:

Fig. 1 is an elevation view of an oiler and suitable cover in accordance with my invention, the cover member being illustrated in longitudinal section.

Fig. 2 is a longitudinal sectional view of the oiler on a larger scale.

Fig. 3 is a cross sectional view taken on line 3-3 of Fig. 2.

Fig. 4 is a greatly magnified fragmentary side elevation view of the oiler tip.

Fig. 5 is a fragmentary sectional view of the lower portion of the oiler illustrating on a greatly magnified scale and showing by dotted lines the operation of oiling a jewel and cap.

Fig. 6 is a greatly magnified cross sectional view of a properly oiled jewel and cap.

Referring to the drawings in general the oiler, in accordance with my invention, includes a main casing 10 with a closure cap 11 at the upper end, and a plug 12 at the lower end carrying a capil-

lary tube 13. A guide rod 14, extending through an axial aperture 30 in the cap 11 and into the casing 10, free of the interior wall thereof, carries an oiler wire 15 coaxial with and extending from the inner end of the rod. The free end of the oiler wire is provided with an oiler tip 16 normally disposed, when the oiler is not in use, in the capillary tube 13. An operating finger piece 17 is provided on the outer end of rod 14 and a dust cap 18 may be provided for the oiler, when not in use.

The construction resembles in some ways the fountain type of oilers which have numerous disadvantages; they usually hold too much oil that takes weeks, even months, of use to reduce to the point of recleaning and refilling. They are often left on the bench exposed to dust and grime with both ends open and oily, and likelihood of the oil becoming rancid or polluted. Oil left for any length of time in fountain oilers is exposed to light and air, which is detrimental, and in practice it is found that the obtainable size of hole or shape of the tip of fountain type oilers is not satisfactory under all oiling conditions and particularly for jewels and pivots and other parts in small watches where precise quantities of oil must be used and placed exactly in the proper places.

However the oiler in accordance with the present invention is not of the fountain syringe type as might appear from the arrangement of parts as above generally set forth. The casing 10 contains but a small quantity of oil which extends into capillary tube 13 to be dispensed therefrom in only small drops on the oiler tip 16 at the end of wire 15. The action of capillary tube 13 is to retain the oil and a vent passage 19 in the end of closure cap 11 is provided so that action of rod 14 will not operate to eject oil from tube 13.

In detail, casing 10 is preferably a glass tubing, and may be made of amber, brown or other colored glass so as to protect the oil from light. Closure cap 11 is preferably of flexible metal having a contracted upper end 20 provided with an axial aperture 30 for slidably receiving the rod 14, the vent passage 19 extending laterally from the aperture through which rod 14 extends unless the aperture is of such a size as to permit air to flow freely therethrough without the formation of the channeled vent passage 19.

Closure cap 11 has a rather tight sliding fit on casing 10 the lower end being provided with a kerf 21 so that it can be made to grip the casing and only yield to a positive movement thereof for changing the longitudinal position of the cap on the casing. Rod 14 is provided with a collar 22 and between it and the end of casing 10 a compression spring 23 is positioned for normally holding the rod in its upper normal or first position with the collar sealing the air vent passage through the end 20 of the cap and retracting the oiler tip 16 into capillary tube 13 except when the rod 14 is first manually depressed to a second position, whereupon the vent passage is immediately opened to communicate with the interior of the casing. The provision of the sliding fit of closure cap 11 on casing 10 affords a means for a slight adjustment of the overall length of the oiler, the adjustment of the stroke of the rod and spring pressure in accordance with the desires of the operator of the oiler in order to obtain the proper touch in delicate operations thereby facilitating the control in the amount of oil dispensed; and the cooperation of the cap 11 with the casing also affords means for adjust-

ment of the extent the oiler tips 16 may be projected from capillary tube 13, to a third position shown by dash lines in Fig. 5. Also closure cap 11 may be entirely removed along with rod 14 and its associated parts, when the casing is to be supplied with lubricating oil and when it is desired to thoroughly clean the oiler as is necessary on occasions. For filling, oil may be drawn into casing by suction on the casing with the capillary tube 13 immersed in the supply oil.

Plug 12 has the capillary tube 13 secured therein and the upper end of the tube is preferably flared outwardly as shown at 24 so as to guide oiler tip 16 on wire 15 into capillary tube 13 when it is placed therein or replaced after filling or cleaning the oiler.

As best shown in Figs. 4 and 5, the lower end of oiler wire 15 is flattened out into a miniature spoon shape to provide the oiler tip 16 which efficiently carries a controlled drop or amount of lubricating oil in accordance with the slow or fast operation of rod 14 as referred to hereinbefore.

In Fig. 5 the most efficient manner of operation of the oiler is illustrated on a magnified scale, with the end of the capillary tube 13 at a considerable distance from a jewel bearing element 25 and cap 26. In Fig. 5 the element 25 is shown as receiving a proper amount of oil 27 from the projected oiler tip 16 illustrated projected in broken lines. With such proper amount of oil dispensed to the elements, by capillary action of the jewel and cap elements, the oil moves to the position shown in Fig. 6 illustrating the jewel and cap as being properly oiled without having the oil come into engagement with the metallic elements 28 in which they are mounted.

When not in use the oiler may have its lower end incased in a dust cover 18 which is provided with a spring retainer 29 as illustrated in Fig. 1. During periods of use however this dust cover is removed and the oil remains fresh and clean and except when the rod is depressed in an oiling operation, the vent opening in upper closure cap 11 is sealed by collar 22. The lower or capillary tube 13 contains the oil in the tube relatively protected from dirt, since the tube end is small. Should the tube pick up any dirt it will be noticed that, as the rod is depressed, the oil in the bottom of the tube is forced out by the oiler wire 15 and forms a drop outside the tube leaving only fresh oil on the oiler tip 16, previously gathered farther back in the tube.

It will be seen from the foregoing that the oiler is particularly adapted for operating on the smaller sizes of watches requiring most delicate touch and precision in oiling operations. In actual use I have found a capillary tube of .020" bore and oiler wire of .0056" diameter with a tip flattened to spoon-like shape of .0015" thickness, both of stainless steel material, to be highly practical. However it is not desired to limit the invention to such sizes or materials as various changes may be made within the scope of my invention as set forth in the following claims.

I claim:

1. A watch oiler comprising a tubular main casing, a capillary tube in communication therewith and extending longitudinally from one end thereof, a closure cap carried by the other end of said casing and extending longitudinally therefrom, said closure cap having an axial aperture and an air vent passage open to the interior of said casing adjacent to said aperture, a rod extending through said aperture and into said casing, a collar on said rod within said cap normally

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engaging said cap and closing said vent passage, a spring operating on said collar to yieldably maintain the rod at the outer end of its stroke against the inner portion of the cap so as to seal said vent passage in the cap, and an oiler wire secured to and extending from the inner end of the rod through said casing and normally disposed with its free end in said capillary tube and adapted to be projected through and beyond the end of the capillary tube by depressing the rod against the action of said spring.

2. A watch oiler comprising a tubular main casing, a capillary tube in communication therewith and extending longitudinally from one end thereof, a closure cap telescopically carried by the other end of said casing and extending longitudinally therefrom, a rod extending through the outer end of said cap and into said casing, a collar on said rod within said cap limiting the outward stroke of the rod, and an oiler wire secured to and extending from the inner end of the rod through said casing and normally disposed with its free end in said capillary tube and adapted to be projected through the capillary tube by an inward movement of the rod, said closure cap having a frictional holding engagement on the main casing whereby it may be longitudinally adjusted thereon and thereby vary the overall length of the oiler and the extent to which the oiler wire may be projected in or beyond the end of the capillary tube.

3. A watch oiler comprising a tubular main casing, a capillary tube in communication therewith and extending longitudinally from one end thereof, a closure cap telescopically carried by the other end of said casing and extending longitudinally therefrom, a rod extending through the outer end of said cap and into said casing, a collar on said rod within said cap limiting the outward stroke of the rod, a compression spring between the collar on the rod and the end of the main casing yieldingly maintaining the rod at the outer limit of its stroke, and an oiler wire secured to and extending from the inner end of the rod through said casing and normally disposed with its free end in said capillary tube and adapted to be projected through the capillary tube by an inward movement of the rod, said closure cap having a frictional holding engagement on the main casing whereby it may be longitudinally adjusted thereon and thereby vary the overall length of the oiler and the extent to which the oiler wire may be projected beyond the end of the capillary tube, and to vary the effect of the compression spring on the rod.

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4. A watch oiler comprising a tubular main casing adapted to receive a quantity of oil, a capillary tube in communication with the interior of said casing and extending from one end of the casing in coaxial relationship therewith, a cap at the other end of said casing provided with an air vent passage communicating with the interior of said casing, a rod extending through said cap and into said casing free of the inner wall thereof, means carried by said rod normally closing said vent passage when the rod is in a first position, and immediately opening said vent passage when the rod is depressed to second position, and an oiler wire secured to and extending from the inner end of said rod, and disposed with its free end in said capillary tube when said rod is in said first and second positions and to be extended from said capillary tube when the rod is further depressed to a third position.

5. A watch oiler comprising a tubular main casing adapted to receive a quantity of oil, a capillary tube in communication with the interior of said casing and extending from one end of the casing in coaxial relationship therewith, a cap at the other end of said casing provided with an air vent passage communicating with the interior of said casing, a rod extending through said cap and into said casing free of the inner wall thereof, means carried by said rod normally closing said vent passage when the rod is in a first position, and immediately opening said vent passage when the rod is depressed to second position, and an oiler wire secured to and extending from the inner end of said rod, provided with a flattened spoon shaped tip at its free end portion, disposed in said capillary tube when said rod is in said first and second positions and to be extended from said capillary tube when the rod is further depressed to a third position to carry the oil from the capillary tube to a point beyond the end thereof.

HERMAN R. KOLLMAYER.

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