Aug. 21, 1962 W. MACKEY 3,050,217

OIL OR THE LIKE DISPENSING DEVICE

Filed Feb. 24, 1960

FIG 1

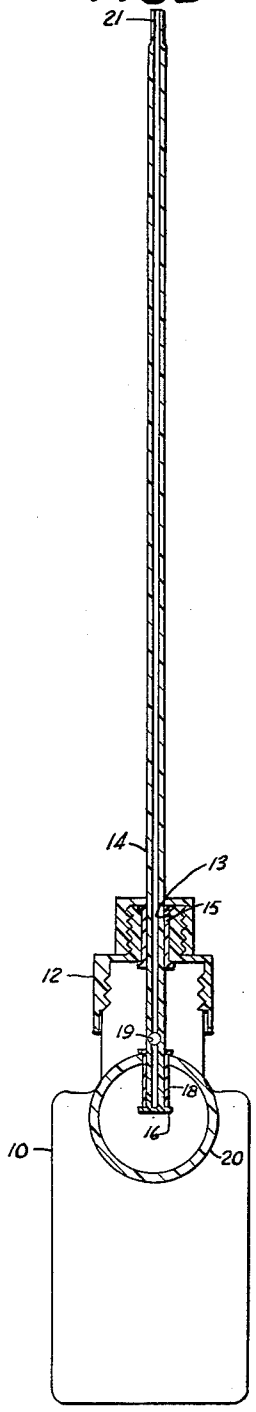


FIG 4

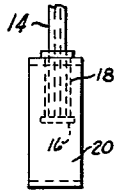


FIG 3

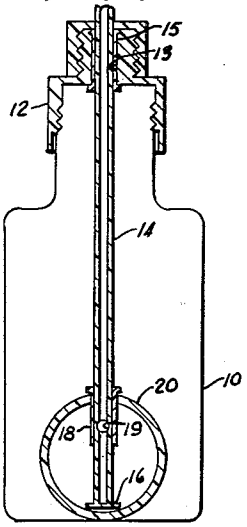


FIG 2

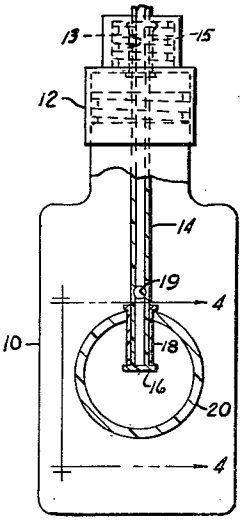


FIG 8

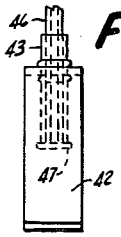


FIG 6

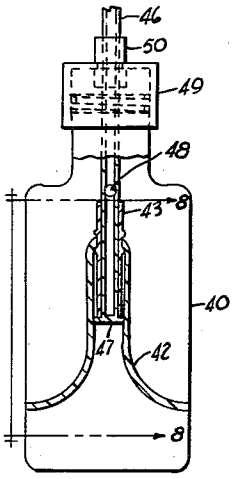


FIG 9

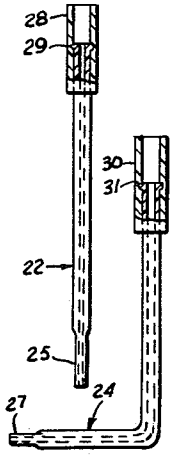


FIG 5

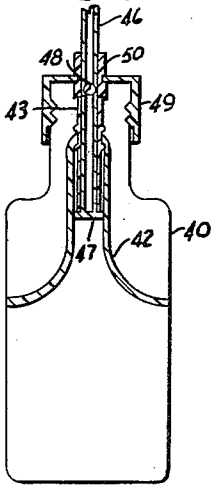
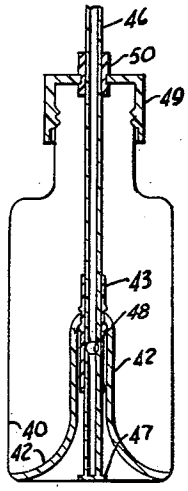


FIG 7



WALTER MACKEY INVENTOR.

BY William L. Fisher

ATTORNEY

United States Patent Office

3,050,217

Patented Aug. 21, 1962

3,050,217

OIL OR THE LIKE DISPENSING DEVICE

Walter Mackey, Detroit, Mich., assignor of one-fourth to John Karpach, one-fourth to Joseph Karpach, both of Detroit, and one-fourth to Vincent Drobnak, Allen Park, Mich.

Filed Feb. 24, 1960, Ser. No. 10,772

10 Claims. (Cl. 222—211)

This invention relates to an improved oil or the like hand dispenser of the type having a flexible walled plastic container for oiling modern business machines and other similar devices.

The principal objects of the present invention are to provide an inexpensive, relatively simple, but apt oil or the like dispenser of the type specified embodying certain novel structure which renders it ideal for use by servicing technicians in oiling electronic computers, programming machines and such similar apparatus and to provide in a dispenser of the type indicated a novel construction of flow control means which provides for dispensing in both upright and inverted positions and which allows parts to retract for handy storing without seepage of oil in the serviceman's tool box and to expand to reach and dispense oil or the like in controlled amounts as required.

The above and related objects will become apparent from the following description taken in conjunction with the accompanying drawings.

In drawings:

FIGURE 1 is a longitudinal sectional view of one embodiment of the invention with the movable parts in one extreme position;

FIGURE 2 is an elevational view of the same embodiment of the invention with the movable parts in an intermediate position;

FIGURE 3 is a view similar to FIGURE 1 with the movable parts in another extreme position;

FIGURE 4 is a fragmentary side elevational view of a portion of the structure of FIGURE 2 as viewed in the direction of the arrows and along the line 4—4 thereof;

FIGURES 5, 6, 7 and 8 are views corresponding, respectively, to FIGURES 1, 2, 3 and 4 of another embodiment of the invention; and

FIGURE 9 is an elevational view of alternate stem sections that may be employed on the device of the previous embodiments.

Referring to the drawings in greater detail 10 indicates a conventional plastic bottle in combination with which is certain apparatus to be described that together make up the dispenser constituting the present invention and the embodiment thereof shown in FIGS. 1 through 4 includes in addition to the bottle 10 a Bakelite cap 12 which, however, is separate from the bottle and a part of the dispensing mechanism that is affixed to it. Such mechanism includes a hollow stem 14 made of suitable plastic such as linear polyethylene which carries the cap 12 through a central opening 13 in the top of the latter and the two are slidable relative to each other along the length of the stem, there being a gland 15 of suitable plastic such as flexible vinyl chloride in the opening 13 serving as a liquid seal and held therein by the flanges at its opposite ends and by the expansion force of the walls of the stem against said opening. The separable upper part of the cap 12 as can be seen bears against the top flange of the gland 15 when it is threaded onto the lower part containing the opening 13 which lower part is internally threaded as is usual for screwing on to the externally threaded neck of the bottle 10 as shown.

The lower end of the stem 14 is outwardly flared as shown and indicated at 16 to retain on the stem below the cap 12 a plastic sleeve 18 of preselected length which may also be made of flexible vinyl chloride. The sleeve

18 is slidable along the length of the stem between two positions with reference to an aperture 19 formed through the wall thickness of the stem a distance above the flared end 16 greater than the length of the sleeve 18. The lowermost position of the sleeve on the stem is a dispensing position in which it is in contact with the flared end 16 leaving the aperture 19 exposed and its uppermost position is a close-off position in which it covers the aperture 19 and forms a liquid seal between the hollow of the stem 14 and the interior of the bottle 10 as will appear. The positioning means for the sleeve 18 on the stem 14 in the particular embodiment being described is a member of suitable plastic such as polyethylene which positions it by contact with the interior of the bottle at the top and bottom. The sleeve positioning means has to have sufficient projection from the sleeve 18 to engage the neck of the bottle or plastic cap 12 as the stem is pulled out of said bottle or cap to stop upward travel of the sleeve and must have length in the direction of the stem 14 below its flared end 16 greater than the sleeve length a sufficient amount to engage the bottom of the bottle as the stem is pushed into it to stop the downwardly travel of the sleeve. In the embodiment shown the sleeve positioning means is in the form of a closed ring, designated 20, joined as to the top of the sleeve as best shown in FIG. 4 and disposed so that the axis of the stem lies in the plane of the ring in order that the flared stem end 16 will strike the ring on a diamter opposite from its junction with the sleeve 18 for reasons which will appear. The sleeve 18 extends through a tight fitting opening in the top of the ring 20 through which the sleeve is forced while carried on the stem 14 and the inherent elasticity of the sleeve causes it to bulge on each side of the ring 20 serving to secure it in place. The upper end of the sleeve 18 is flanged for additional security for this purpose. The width of the ring 20 is greater than the diameter of the sleeve 18 as shown in FIG. 4.

The free end of the stem 14 includes a restriction as indicated at 21 to meter the oil dispensed and to interfit with other stem sections as shown and indicated at 22 and 24 in FIG. 9 which have like restrictions on their free ends as at 25 and 27, respectively. The stem sections 22 and 24 have affixed on their connecting inner ends which receive the restriction 21 on the flow-control carrying stem 14, connector members 28 and 30, respectively, which have inside diameters slightly greater than the outside diameter of the stem 14 to form a sliding liquid-seal fit therewith and to impart rigidity to the junction of each stem section and the stem 14. The connector members 28 and 30 are made of suitable flexible plastic such as vinyl chloride and are forced over flanges 29 and 31 formed on said inner ends of the stem sections 22 and 24, respectively, by which they are permanently held in place. A liquid seal is also formed within the corresponding connector member of each stem section by the insertion of the restriction 21 into the inner connecting end of said stem section which has the same outside diameter as the main body of the stem 14 and an inside diameter slightly greater than the outside diameter of the restriction 21 which it receives. While the main stem is bendable to an extent for reaching inaccessible places, the use of such stem sections as shown in FIG. 9 provides for change at will of the over all length and shape of the dispenser spout to best fit the particular oiling application.

Assembly of the embodiment described is accomplished by squeezing of the sides of the pliable plastic ring 20 until it fits within the neck of the bottle and inserting it thereinto in this condition after which it expands to its normal position within the bottle and below the neck. The bottle may then be filled with oil as desired and the cap screwed onto the neck of the bottle.

In operation of the device the stem **14** is expanded from the bottle **10** by pulling upwardly on it while holding the bottle and it carries the sleeve **18** and ring **20** toward the neck of the bottle until the ring **20** strikes the bottle neck which stops its upward travel. The sleeve **18** stops with the ring **20** while the pull on the stem **14** is continued moving it upwardly until its flared end **16** abuts the lower end of the sleeve which is the limit of travel of the stem **14**. This position of the movable parts of the dispenser is shown in FIG. 1 wherein it can be seen that the aperture **19** in the stem is uncovered and above the sleeve **18** thus communicating the interior of the bottle to the hollow of the stem so that oil in the bottle can be dispensed through the restriction **21** on the free end of the stem or the restriction on one of the stem sections **22**, **24** by inverting the bottle and squeezing its sides. If it is desired to dispense oil without inverting the bottle, the stem **14** need be merely lowered relative to the cap **12** carrying with it the ring **20** and sleeve **18** in its lowermost position on the stem **14** until the aperture **19** is below the oil level, such a position for the moveable parts being shown in FIG. 2. In any such position in which the aperture **19** is uncovered and below the oil level the sides of the bottle need only be squeezed to force the oil in controlled amounts out of the outermost restriction on the dispenser spout. To prevent dispensing of oil the moveable parts are lowered from a position such as that of FIG. 2 to that shown in FIG. 3 by pushing the stem **14** into the bottle until the ring **20** strikes the bottom thereof by which its downward travel is stopped and with it that of the sleeve **18**. The push on the stem **14** is continued while this takes place moving it downwardly until its flared end **16** strikes the ring **20** on the inside of the latter as shown in this figure which is another limit of travel of the stem **14**. The final movement of the stem **14** carries the aperture **19** into the sleeve **18** by which is it covered and no amount of squeezing of the sides of the bottle can cause dispensing of the oil in the bottle which is effectively sealed off from the hollow of the stem **14**.

By virtue of the foregoing structure the most retracted position for the stem corresponds to the close-off position of the flow control parts which is highly desirable from the standpoint of the technician, who has to merely push the stem into the bottle to the limit of its travel in which position it occupies the least amount of space in his tool box. If by accident the stem is accidentally expanded from the bottle after first having been so pushed to close-off position for the flow-control parts, the latter remain in the same relative position with respect to the stem and absolutely prevent seepage of oil from the dispenser. Deliberate and intentional action is required as a consequence of the structure described before the device can be placed in condition for dispensing and such action that is required is that of pulling the stem from the bottle until the ring **20** strikes the neck (or the bottle cap depending upon the design of the bottle) and further pulling beyond this point of the stem which tends to remain with the sleeve and ring to such an extent as to expose the aperture **19**.

The embodiment of the invention shown in FIGS. 5 through 8 differs from the previous embodiment in the form of positioning means for the aperture-covering sleeve and referring now to these figures, the bottle therein, designated **40**, bears a certain relationship with the sleeve positioning means which is in the form of a reversely bent plastic strip **42** with oppositely and outwardly projecting wings which co-act with the sides of the bottle. The sleeve in this embodiment is designated **43** and is joined to the strip **42** by an opening centrally formed in the reverse bend of the latter through which the sleeve extends and against which it is expanded as before explained by the expansion force of the walls of the stem indicated at **46** in this embodiment. The stem **46** is flared at its lower end as shown and indicated at **47** to prevent its removal from the sleeve **43** and is provided with an aperture **48** at

a distance from its flared end greater than the length of the sleeve as in the prior embodiment. The stem **46** slidably carries the cap **49** of the bottle, it being affixed to said cap which is a different form by a vinyl chloride gland **50**. The assembly and operation of this embodiment is substantially the same as hereinabove described for the previous embodiment except that the gland **50** is extended below the cap **49** a sufficient distance to receive within it the aperture **48** and to seal it off in the extreme extracted position of the stem **46** and also the sleeve **43** is extended in length to act as its own stop for its upward travel upon abutting the gland **50**. By this construction a still greater deliberate action is required to dispense oil which in turn is greater insurance against accidental seepage of oil from the dispenser in that the stem must not only be pulled beyond the point at which it tends because of friction to remain with the sleeve when the upward travel of the latter is terminated but the stem must then be reversed and pushed downwardly into the bottle before dispensing of oil from the dispenser spout can occur. An advantage in construction of this embodiment is that in the two extreme positions of the stem relative to the bottle the flow control parts are in close-off position and advantages of the previous embodiment are the complete independence of the flow control parts of the device from any relation to the size and shape of the bottle and the positive unseating action of the stem **14** against the closed ring **20** from the extreme extracted position of the stem in which the sleeve positioning means is drawn into the neck or cap of the bottle where it is possible for it to get squeezed in such a manner as to hinder its free movement downward into the bottle when the stem is so moved. The problem is entirely alleviated in the first embodiment by virtue of the positive unseating action mentioned and the extension of the gland **50** and the increased length of the sleeve **43** serve to overcome this tendency in the second embodiment described.

It will thus be seen that there has been provided by the present invention an improved oil or the like hand dispenser of the type indicated in which the objects hereinabove set forth have been successfully achieved together with many thoroughly practical advantages. While the preferred embodiments of the present invention have been shown and described it is to be understood that various changes and modifications may be made without departing from the spirit of the invention or from the scope of the appended claims.

What is claimed is:

1. In an oil or the like hand dispenser of the type having a flexible walled container, the combination of dispensing mechanism operative within the container comprising a hollow plastic stem member, a cap for the container slidably carried on the stem member so that the stem member is reciprocable in and out of the container, a flexible plastic sleeve member on the stem below the cap, and the two members slidable relative to each other, the lower end of one member being sealed and the other member remaining open, an aperture in the wall of said one member communicating its hollow interior to its outside, and positioning means which acts on the sleeve member to hold it stationary so the stem member moves relative to the sleeve member between two positions in its opposite directions of reciprocation, in one of said two positions, said other member without said aperture covering the aperture in said one member, in the other of said two positions, said aperture being uncovered.

2. Dispensing apparatus for an oil or the like hand dispenser of the type having a flexible walled container comprising a hollow reciprocative stem having an aperture in its wall communicating its hollow to its outside, a sleeve slidably carried on the stem, and positioning means which acts on the sleeve to slide it on the stem between two positions thereon, said aperture being within the sleeve in one of said two positions by which the hollow of the stem is sealed off from its outside and being without the sleeve in

the other of said two positions, said positioning means intercepting the sleeve at spaced points in opposite directions of reciprocation of the stem without intercepting the stem to hold the sleeve stationary during continued movement of the stem, whereby to slide the sleeve on the stem between said two positions.

3. Apparatus as claimed in claim 2 wherein the positioning means includes a member carried by the stem, said member and the stem moveable together when the stem is reciprocated but the two also capable of movement relative to each other, said member projecting from the stem sufficiently so that it can be intercepted without intercepting the stem in one direction of its movement, interception of said member maintaining its stationary and the sleeve with it during continued movement of the stem in its said one direction, whereby to slide the sleeve on the stem from one to another of said two positions.

4. Apparatus as claimed in claim 3 wherein the positioning means includes a member carried by the stem which can be intercepted in opposite directions of reciprocation of the stem without intercepting the stem, whereby to slide the sleeve on the stem between said two positions.

5. Apparatus as claimed in claim 3 wherein the hollow stem is sealed at its bottom end and said member projects below said bottom end in one of said two sleeve positions sufficiently so that it can be intercepted during downward movement of the stem.

6. Dispensing apparatus for an oil or the like hand dispenser of the type having a flexible walled container comprising a hollow moveable stem sealed at its bottom end and having an aperture in its wall communicating its hollow to its outside, a sleeve slidably carried on the stem, said aperture located on the stem above said bottom end a distance greater than the length of the sleeve, the sleeve having one position on the stem below the aperture and another position on the stem covering the aperture by which the hollow of the stem is sealed off from its outside, and a positioning member which acts on the sleeve to slide it on the stem from said one to said other position, said positioning member carried by the stem and the two moveable together when the stem is moved but the two also capable of movement relative to each other, said positioning member projecting below said bottom end in said one position sufficiently so that it can be intercepted during downward lengthwise movement of the stem without intercepting the stem to hold the positioning member stationary during continued downward movement of the stem, said positioning member maintaining the sleeve stationary with itself during such continued downward movement of the stem whereby to slide the sleeve on the stem from said one to said other position.

7. Apparatus as claimed in claim 6 further including a bottle cap, the stem arranged for reciprocation through said cap, and liquid seal means between the stem and cap.

8. In an oil or the like hand dispenser of the type having a flexible walled container, the combination of a hollow stem arranged for reciprocation in and out of the container, said stem having an aperture in its wall communicating its hollow to its outside, a sleeve slidably carried on the stem, and positioning means which acts on the sleeve to slide it on the stem between two positions thereon, said aperture being within the sleeve in one of said two positions by which the hollow of the stem is sealed off from its outside and being without the sleeve in the other of said two positions, said positioning means intercepting the sleeve in opposite directions of reciprocation of the stem without intercepting the stem to hold the sleeve stationary during continued movement of the stem, whereby to slide the sleeve on the stem between said two positions.

9. The combination as claimed in claim 8 wherein the positioning means includes a member carried by the stem, said member and the stem moveable together when the stem is reciprocated but the two also capable of movement relative to each other, said member projecting from the stem sufficiently so that it can be intercepted without intercepting the stem in its opposite directions of reciprocation, interception of said member maintaining it stationary and the sleeve with it during continued movement of the stem, whereby to slide the sleeve on the stem in opposite directions between said two positions.

10. The combination as claimed in claim 9 wherein the hollow stem is sealed at its bottom end and said positioning means includes a member which projects below said bottom end in one of said two sleeve positions sufficiently so that it can be intercepted during downward movement of the stem into the container.

References Cited in the file of this patent

UNITED STATES PATENTS

1,527,108	Anderson	Feb. 17, 1925
2,727,364	Malko	Jan. 3, 1956
2,770,399	Gross	Nov. 13, 1956