

May 8, 1956

S. C. HOPE

2,744,656

OIL DISPENSING RECEPTACLES

Filed Oct. 9, 1952

2 Sheets-Sheet 1

Fig. 1.

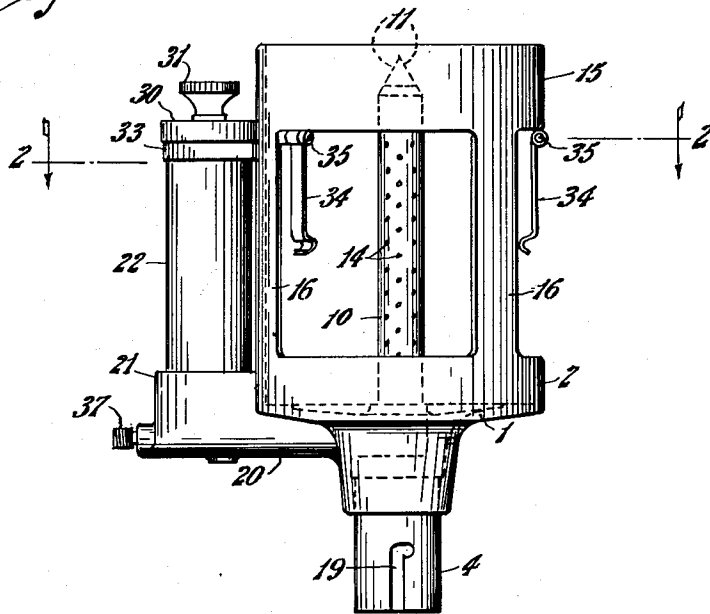


Fig. 2.

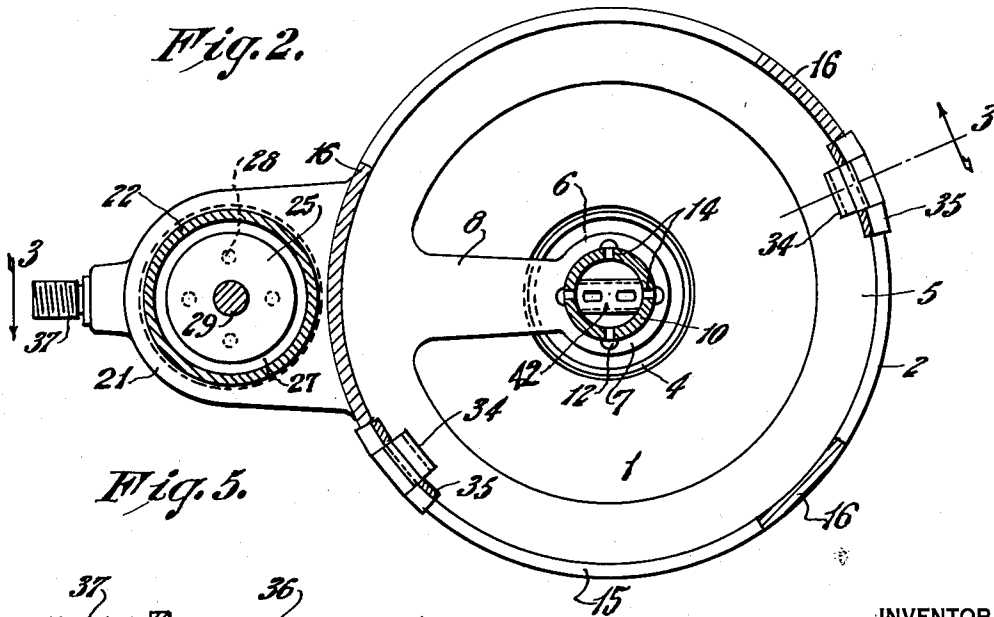
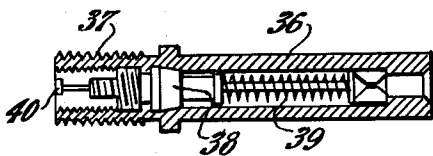


Fig. 5.



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2 Sheets-Sheet 2

Fig. 3.

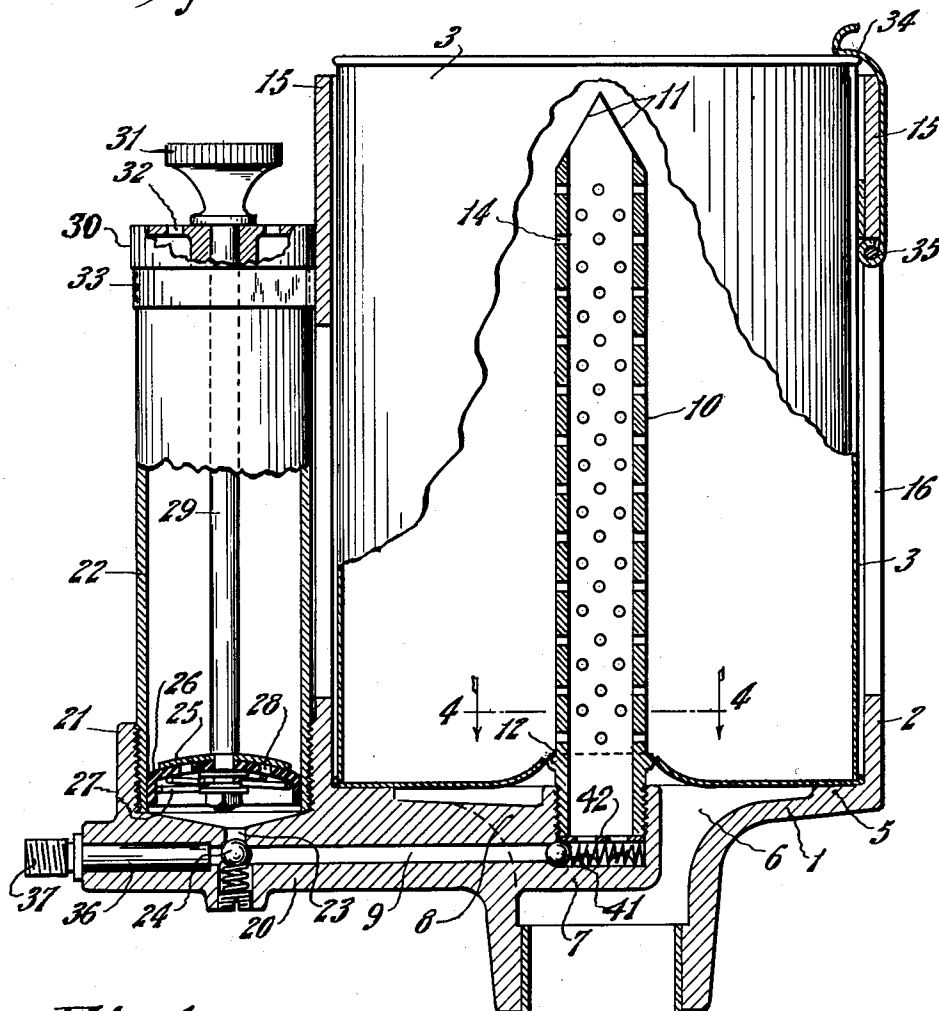
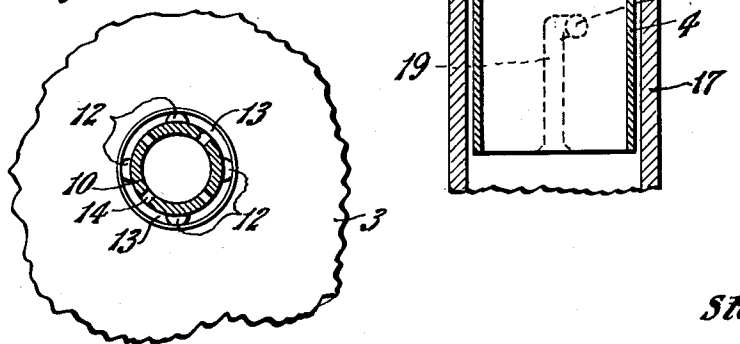


Fig. 4.



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1

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OIL DISPENSING RECEPTACLES

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2 Claims. (Cl. 222—82)

This invention relates to an improved oil-dispensing receptacle.

While the invention is capable of general application, it finds one advantageous use as a means for transferring lubricating oil from a standard sealed can into the fill pipe of an automobile engine, or into any other desired receiver, conveniently, expeditiously and in a manner such as to insure complete removal of the contents of the can and avoid loss during the transfer from the can to the receiver.

The invention has for an object the provision of a dispensing receptacle in the form of a funnel having an upper end, formed to receive one end of a can of lubricating oil and provided with an outwardly-projecting tubular spike adapted to be driven through said end of the can and penetrate nearly to the other end thereof, and a spout through which the contents of the can may be delivered to the receiver, the receptacle having a valved conduit adapted for connection at one end to a suitable air-pressure-producing means and communicating at its other end with the interior of the tubular spike, whereby air under pressure may be forced into the upper end of the can to rapidly expel the contents thereof.

The invention has for another object the provision in a receptacle of the class described, of a large number of perforations spaced angularly about and axially along the peripheral wall of the tubular, can-opening spike, whereby air under pressure may be emitted in many jets against the peripheral wall of the can to remove the oil that would otherwise cling thereto and effect a substantially complete removal of the contents of the can.

The invention will be disclosed with reference to the one illustrative embodiment of it shown in the accompanying drawing in which:

Fig. 1 is a small scale exterior elevational view of an oil-dispensing receptacle embodying the invention;

Fig. 2 is a sectional plan view taken on the line 2—2 of Fig. 1, and drawn to a larger scale;

Fig. 3 is a sectional elevational view taken on the line 3—3 of Fig. 2, and showing the manner in which a can of lubricating oil is mounted therein;

Fig. 4 is a fragmentary sectional plan view taken on the line 4—4 of Fig. 3; and

Fig. 5 is an enlarged sectional elevational view showing the air inlet valve in the connection for attachment to an outside source of air under pressure.

Referring to these drawings; the dispensing receptacle (Figs. 1 and 2) is essentially a funnel having a circular base 1, an upstanding annular rim 2 and a discharge spout 4. The rim 2, as shown in Fig. 3, is of a size to freely receive one end of a standard sealed can 3 of lubricating oil, say for example a one-quart can. The can 3 is adapted to rest on an annular flange 5 on base 1 and the latter has therethrough a downwardly converging passage 6 for connecting the space within the marginal flange 5 and beneath can 3 with spout 4. In the center of this passage 6 (Figs. 2 and 3) is a hollow hub 7, connected to the base by a radial arm 8, having

2

a conduit 9 therein, communicating with the lower end of the interior of the hollow hub 7 near the closed lower end thereof. A tubular can-opening spike 10 (Fig. 3) is threaded into, or otherwise fixed in, the hollow hub 7 and projects upwardly from base 1 far enough to penetrate into the upper end of can 3. The upper end of this spike is beveled, as at 11, or otherwise formed so as to readily penetrate the can 3. Near the lower end of spike 10 are several angularly-spaced projections 12, which spread the punctured wall of the can beyond the peripheral wall of spike 10 and insure that an adequate outlet, such as 13 (Fig. 4), is left for oil to flow from the can into the passage 6. The spike 10 is preferably provided with a large number of perforations 14 in its peripheral wall. These perforations are spaced angularly about such wall and axially along the wall, throughout the entire periphery thereof.

In applying the described receptacle to a can of oil, the can is placed on a suitable support, resting on one end; the receptacle is inverted and then the spike is driven through the opposite end of the can until the last-named end engages the flanged part 5 of base 1. To facilitate centering the spike 10 on the upper end of the can, an upper annular flange 15 of the same diameter as flange 2 may be provided, the upper and lower flanges being suitably and integrally interconnected as by the vertical bars 16. After the can and receptacle have been thus assembled, the parts are turned back into the position illustrated in Fig. 3. The spout 4 may then be inserted in the fill pipe 17 of an automobile engine, being held thereto if necessary in any suitable way, as for example, by the engagement of a projection, such as 18, on the fill pipe 17 with a bayonet slot, such as 19, formed in the spout 4. Obviously, the receptacle may be used to dispense the liquid into any other kind of a receiver.

The emptying of the can 3 may be expedited by the use of air under pressure forced into and through the hollow spike 10 and out through its open upper end into the can. For this purpose, a hand-operated air pump may be fixed to the oil-dispensing receptacle, as shown. The base 1 (Figs. 2 and 3) has a radially outward extension 20, which is aligned with the described arm 8 and contains an extension of the conduit 9 and this extension has a hollow hub 21 in which is suitably fixed, as indicated in Fig. 3, the lower end of a pump barrel 22. The lower end of the cylinder, formed within this barrel, communicates with the conduit 9 through an outlet passage 23 controlled by a spring-pressed outwardly-opening ball check valve 24. Slidable in the cylinder is a suitable piston, herein shown as composed of a rigid, washer-like body 25 and a flexible cup 26, which is urged toward the body by a spring 27. The cup 26 has openings 28 therethrough, which are closed by body 25 during downward movement of the piston. On an upstroke of the piston, the cup 26 moves away from the body 25, uncovering the openings 28 and allowing air to pass therethrough. The piston has fixed thereto a rod 29, which extends through the cap 30 of barrel 22 and has on its upper end a knob 31 by means of which the piston may be reciprocated. The cap has openings 32 for the admission of air into the upper end of the cylinder. The upper end of the barrel 22 may be clamped to the upper flange 15 by a clip 33.

It will be clear that on reciprocation of the piston air will be drawn into the cylinder beneath the piston on each upstroke and expelled from the cylinder on each downstroke, leaving through passage 23, opening valve 24 and passing through conduit 9 to the lower end of pipe 10 and through the latter and into can 3 to expel its contents. It is also desirable to emit air through holes 14 in a large number of jets which are directed against the

3

peripheral wall of the can. As the oil level drops in the can, these air jets will remove the oil which would otherwise cling to the wall and thereby effect a more thorough removal of the oil than could otherwise be had.

For insuring that the can 3 will not be moved upwardly in the receptacle during removal of the contents by air pressure, one or more latches 34 may be provided to engage the upper end of the can. Each latch is hinged at 35 to the upper rim 15 and may be swung upwardly into the can-locking position shown or downwardly, when removal of the can is desired.

The air-pumping means need not necessarily be carried by the dispensing receptacle, as shown, and a separate pump may be used. For this purpose, there is fixed in the outer end of conduit 9 at a location outwardly beyond valve 24, a standard tire valve stem 36, having a threaded outer end 37 to which the coupling on the outer end of the hose of a hand pump may be threaded. Also, this end 37 may receive the chuck on the outer end of the hose of a tire inflation apparatus which, however, should be adjusted for very low pressure, for example a few pounds per square inch. The sleeve 36, as shown in Fig. 5, contains the usual valve 38, held closed by a spring 39 and adapted to be opened by air pressure from a pump or by inward pressure on a pin 40 when a coupling on the hose of a tire inflation apparatus is engaged with the end 37.

An additional check valve may be provided at the delivery end of conduit 9 to avoid filling the latter with oil when the spike 10 is driven into the oil can 3. This valve may be a spring-pressed ball 41 held in position in the bottom of hollow hub 7 by a cage 42 of channel form, held frictionally in the hub and having openings to allow passage of air to spike 10. The cage 42 guides the valve and prevents upward or sidewise displacement of both the valve and its spring.

The invention is particularly adapted for use in automobile service stations. A service station operator, provided with one of these receptacles, may service many automobiles by transferring oil from a can to the automobile in a way which is convenient and avoids spillage of oil and which is very rapid and effects complete removal of the oil. The operator would normally place the spout 4 in the fill pipe of the engine crankcase, apply air pressure by operating the hand pump a few strokes, or in any other desired way, and then remove the dispensing receptacle and replace the cap on the fill pipe. However, the owner of the automobile may have one of these dispensing receptacles as an accessory and he may, if he so desires, have it attached to the fill pipe of the engine, removing it only when more oil is required. For the automobile owner, there is the advantage of getting all the oil out of the can. This cannot

4

be done by simply drainage because some oil will cling to the walls of the can. In order for the purchaser to get a quart of oil from the can, somewhat more than a quart has to be placed in the can to compensate for what will remain clinging to the walls of the can. This invention effects scrubbing of the walls of the can by air jets to remove the clinging oil and effect complete emptying of the can. For the service station proprietor, the invention provides speed in transferring oil from the sealed can, that is desired by discriminating customers, into the engine crankcase in a manner which will satisfy the customer that he is getting all that he pays for.

What is claimed is:

1. In a dispensing funnel, having intermediate its ends an endless flange adapted to be engaged by the outer peripheral portion of the lower end wall of a can of lubricating oil and a spout extending downwardly from said flange and communicating with the space within said flange; a tube fixed to the funnel and located inside said flange in upstanding relation and terminating with a pointed upper end adapted to puncture the lower end wall of the can when the latter is thrust downwardly into engagement with said flange, said tube extending upwardly above said flange a distance approximating that between the lower and upper end walls of the can and having its upper outlet end adapted to communicate with the interior of the can near its upper end wall, and a conduit in said funnel for introducing air under pressure into the lower end of said tube to pass upwardly through the tube and issue into the upper part of the can to aid in expelling the contents of the can through its punctured lower end and into said spout.

2. The combination, as claimed in claim 1, in which the peripheral wall of said tube has many perforations spaced angularly around its periphery and spaced axially from end to end thereof for emitting from many angles and many levels jets of air under pressure to impinge on the inner peripheral wall of the can and remove oil therefrom.

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