

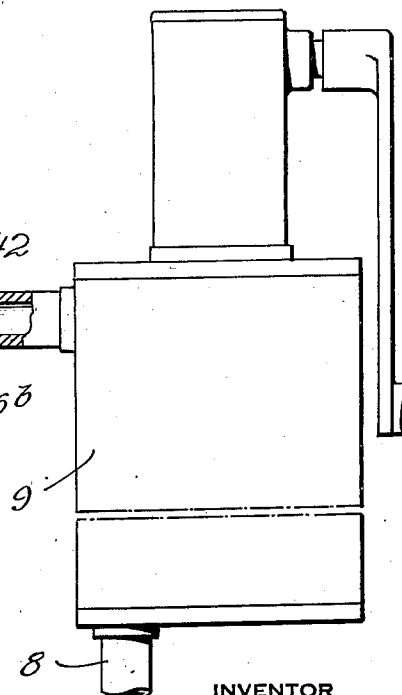
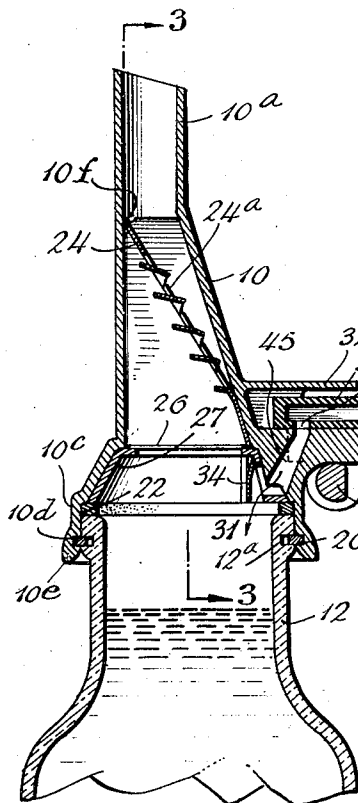
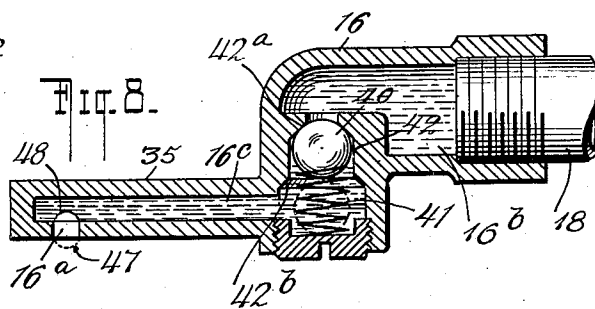
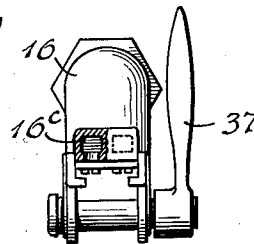
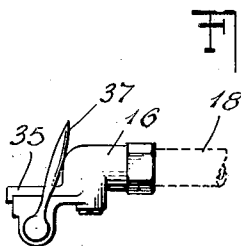
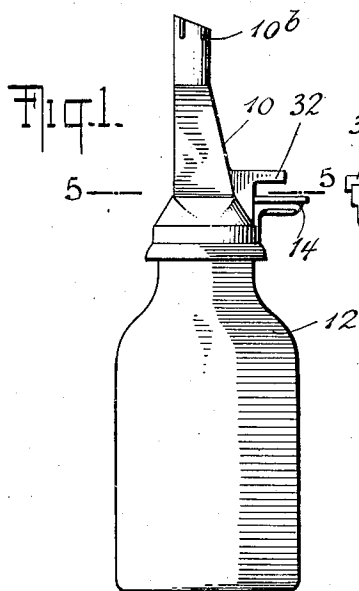
Dec. 11, 1934.

M. S. YOUNG

1,984,005

FLUID DISPENSING APPARATUS

Original Filed Nov. 6, 1930 2 Sheets-Sheet 1



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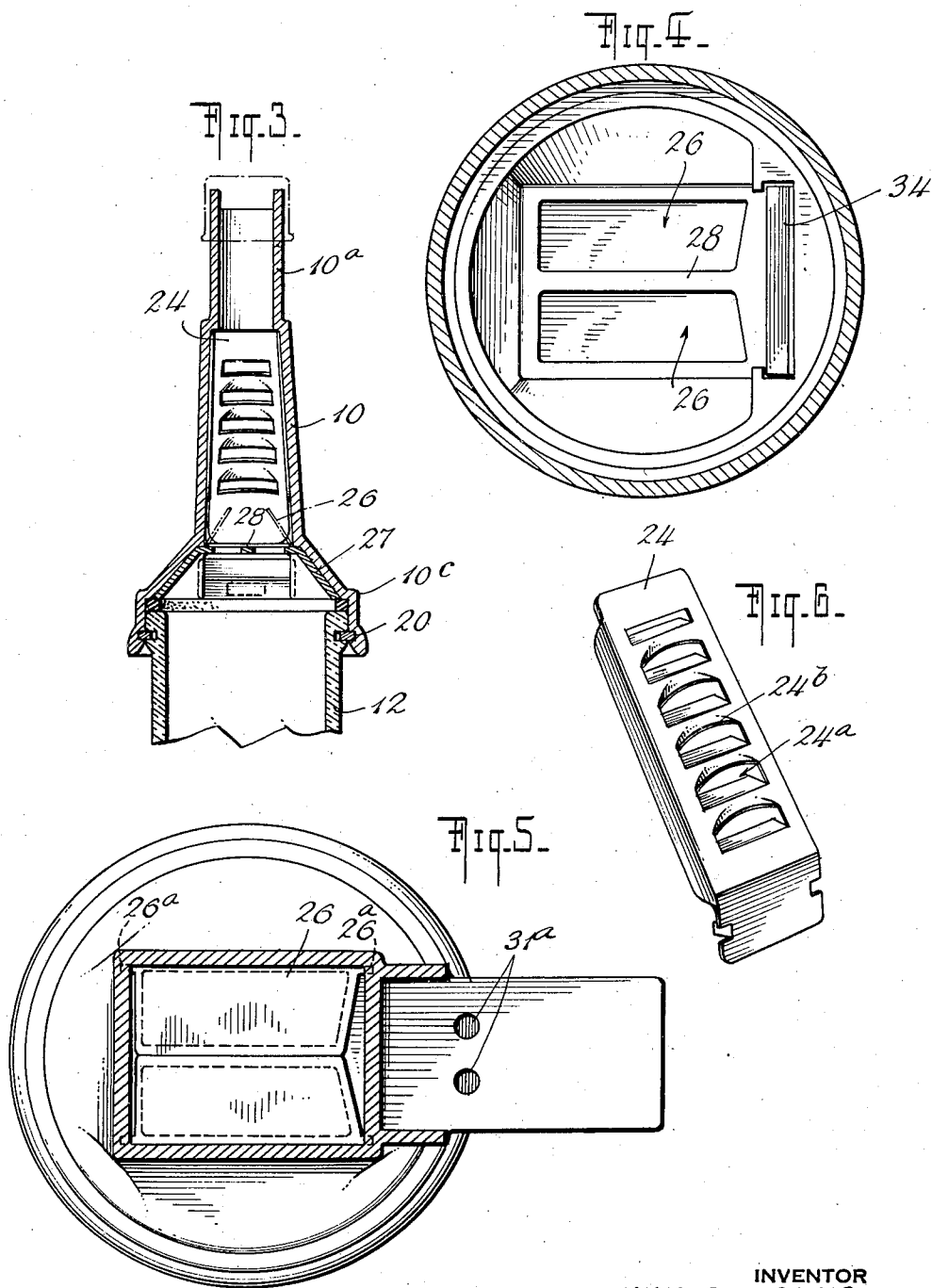
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FLUID DISPENSING APPARATUS

Original Filed Nov. 6, 1930 2 Sheets-Sheet 2



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1,984,005

FLUID DISPENSING APPARATUS

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11 Claims. (Cl. 221—28)

This invention relates to improvements in apparatus, for dispensing lubricating oil or other fluids in small measured quantities, of the type disclosed in Letters Patent of the United States No. 1,682,544, to Young and Novick. In such apparatus the oil is filled into bottles or containers of unit capacity, and the containers are provided with means for permitting the ready discharge of their contents, but for preventing refilling except from a source of supply provided with a specially formed discharge nozzle adapted for cooperation with corresponding inlets on the containers.

One object of the invention is to improve the forms of the filling nozzle and the inlet to adapt them for easy manufacture by die casting or other molding operation and, at the same time, to increase the difficulty of refilling the containers by illegitimate means. Another object is to provide the filling nozzle with means acting automatically to prevent dripping of oil after the filling and the removal of a container. A third object is the production of a head, for a dispensing container or bottle, in which the necessary pouring spout, inlet, baffles and valves are combined and assembled in a simple and inexpensive manner which facilitates the use of molding in the manufacture of the device. Other objects of the invention, and the features of construction by which the various objects of the invention are attained, will be pointed out in the following description of the illustrated embodiment of the invention.

In the accompanying drawings, Fig. 1 is a side elevation of a dispensing container with a head and a filling nozzle embodying the present invention. Fig. 2 is a partly sectional side elevation of the same parts, together with an oil pump to which the nozzle is attached. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a bottom plan view of the head of the dispensing container. Fig. 5 is a section on the line 5—5 of Fig. 1. Fig. 6 is a perspective view of the baffle. Fig. 7 is an end elevation, partly sectional, of the filling nozzle, and Fig. 8 is a sectional side elevation of the same.

In the illustrated embodiment of the invention the dispensing container is a glass bottle 12, to the top of which is permanently attached a head which comprises the means for controlling the filling and the emptying of the bottle.

The head comprises an integral die-cast hollow member constituting a pouring spout, with a portion 10 of pyramidal form, and with an upper tubular extremity 10a for convenient introduction into the oil filter of an engine. The part 10a has ribs 10b to receive and fit a dust cap which

is of sufficient diameter to permit the free escape of air when the bottle is filled.

The lower end of the spout is formed as a cap 10c to fit over the top of the bottle, and a feature of the invention resides in the means for providing a permanent fluid-tight connection between the cap and the bottle. For this purpose these parts are provided with registering grooves 10d and 12a. A spring ring 20 with a normal diameter greater than that of the top of the bottle is inserted in the groove 20, and the cap is then forced downwardly so that its inwardly bevelled lip 10e contracts the ring. The ring expands into engagement with the groove 10d and thus locks the parts inseparably together. A gasket 22, interposed between the bottle mouth and the cap, makes a fluid-tight seal between these parts.

The receptacle is designed for convenient filling only from a source of supply, such as a pump 9, by means of a peculiarly formed filling nozzle associated with the pump. For this purpose the spout has an inlet comprising a lateral arm or projection 14 near its lower end. This inlet projection has a flat upper surface in which are two inlet openings 31a (Fig. 5) communicating, through passages 31, (Fig. 2) with the inside of the spout. The filling nozzle 16 has a slender forward portion 35 with a flat lower surface adapted to fit oil-tight against the upper surface of the inlet projection. These parts may be clamped together by means of a cam 36 operated by a handle lever 37. With the parts in this position two openings 16a in the bottom of the nozzle member 35 register with the openings 31a so that oil may be forced into the bottle by the pump. To prevent direct and convenient access to the openings 31a with unauthorized filling means, a guard plate 32 extends over the inlet projection, at a distance only sufficient for the convenient introduction of the filling nozzle.

The spout is provided with discharge valves, to permit discharge of the oil from the bottle but prevent refilling through the upper end of the spout, and with a filling valve to close the inlet passages when the bottle is inverted to discharge the oil. As a simple and convenient means for supporting the valves and providing seats therefor, a cup-shaped casing 27 is fitted within the cap 10c. This casing has a flat upper surface forming a seat for the discharge valves 26, the seat having two openings separated by a central bar 28. Each discharge valve is in the form of a flat plate, with projecting pintles 26a at its outer angles. The pintles turn in bearings furnished by opposed surfaces on the casing and the spout,

so that the valves can swing to the open position shown in broken lines in Fig. 3, when the container is inverted to discharge its contents.

The filling valve 34 is also a sheet-metal flap valve, hanging freely at its upper edge within the casing and controlling a lateral opening, in the casing, which receives the oil from the passages 31. When the container is inverted to pour its contents the inlet valve admits air freely but prevents escape of oil through the inlet.

To prevent the introduction of any instrument for holding the discharge valves open when the container is in upright position, a baffle 24 is placed within the portion 10 of the head. This baffle is formed of sheet metal, with louvres 24a, and it is inserted loosely with its upper end against the shoulder 10f at the junction between the parts 10 and 10a of the spout. The lower end of the baffle rests on the casing. The baffle is thus held securely in position without the necessity of any distinct fastening means for the purpose.

It will be evident that the form of the spout member lends itself to manufacture by die casting or molding, and that all of the several parts of the head may be assembled without mechanical operations, by merely inserting the baffle, the valves and the housing loosely in place within the spout prior to the fixing of the spout on the bottle.

When a container has been filled and is removed from the filling nozzle, it is desirable that no oil drip from the nozzle, and the nozzle of the present invention is accordingly provided with means for preventing such dripping. The passage within the nozzle is divided, by a partition with two valve seats 42a, into a rear chamber 16b and two forward conduits 16c extending to the openings 16a. A valve 40, in the form of a ball, cooperates with each valve seat and is normally held against it by a spring 41. Each ball moves within a cylindrical bore 42, in which it fits closely so that while within this bore it acts as a piston. The lower part of the bore is of enlarged diameter, to afford a clearance space 42b for the passage of oil around the ball.

When the oil pump is operated the pressure of the oil forces the valves away from their seats and into the clearance spaces 42b, and the oil flows freely through the nozzle. When operation of the pump ceases the springs 41 reseal the valves. At this time the openings 16a are full of oil, which tends to form drops 47 shown in dotted lines. However, as the valves move upwardly in the bores 42 their piston-like action draws the oil inwardly and causes it to assume concave meniscus form as shown at 48 in Fig. 8. With the oil in this position its viscosity is sufficient to prevent dripping. The valves, by engagement with their seats, preserve the suction by which the oil is retained in the nozzle.

I claim as my invention:

1. The combination of a fluid container with an inlet, a filling nozzle provided with a fluid passage, means for forcing said nozzle into fluid-tight engagement with said inlet, and means, within said fluid passage, for retracting the fluid therein after completion of a filling operation, to prevent dripping from the nozzle upon removal of the container.

2. The combination of a fluid container with an upwardly open inlet, a filling nozzle with a fluid passage terminating in a downwardly directed discharge opening, a valve seat and a cylindrical

bore in said passage, a valve fitting and movable, within said bore, into engagement with the valve seat against the normal direction of flow through said passage, and a spring for so moving said valve, and means for forcing said nozzle and said inlet into fluid-tight engagement.

3. The combination of a fluid container with an upwardly open inlet, a filling nozzle with a fluid passage terminating in a downwardly directed discharge opening, said container inlet and filling nozzle being formed for fluid-tight engagement, means, enclosed in said fluid passage, for clearing fluid from said outlet opening and closing said passage, said means being movable to inoperative position by the pressure of the liquid flowing through the passage to the container, and means for imparting an operative return movement to said means when said pressure is released.

4. In dispensing apparatus of the class described, the combination, with a container provided with an outer peripheral groove at the top, of a pouring spout fitting over the top of the container and having an inner peripheral groove, and an expansible ring seated partly in each of said grooves and permanently securing the container and the spout together.

5. The combination, with a filling nozzle having a fluid-discharging opening in its lower surface, of a fluid container provided with an inlet opening through a surface formed to make a fluid-tight contact with the lower surface of said nozzle, and a guard fixed on the container close to and overhanging the inlet opening so as to prevent direct and convenient access thereto, the space between the guard and the adjacent surface being not substantially greater than necessary for the reception of the nozzle.

6. In combination with a fluid container in the form of a bottle, a one-piece molded member, constituting a tapering pouring spout, fixed at its lower end to the mouth of the bottle and provided with a lateral inlet, a casing loosely inserted in a lower portion of said casting and retained therein by the bottle, the casing having a valve seat at the top, a valve loosely inserted and held between the casing and an upper portion of the pouring spout and cooperating with said valve seat, and a baffle loosely introduced into the upper portion of the pouring spout, resting on and retained in position by the casing.

7. In combination with a fluid container, a hollow molded member constituting a pouring spout and provided with a lateral filling inlet near its lower end, a casing enclosed in and fitting the lower portion of the pouring spout, the casing being open at the bottom and having a lateral inlet opening, in line with said filling inlet, and a discharge opening above said lateral opening, a baffle, within the pouring spout, above said casing, and valves, carried by the casing, for controlling both of said openings therein.

8. The combination of a hollow molded member constituting a pouring spout and provided, near the bottom, with a lateral inlet, a valve-seat member loosely inserted in the lower end of the pouring spout and having a valve seat above said inlet, means, including a fluid container, secured to and closing the lower end of the pouring spout and supporting the valve-seat member, an outlet valve supported by the valve-seat member and cooperating with the valve seat thereof, and a baffle, for preventing access to said valve, supported in the pouring spout above the valve-seat member.

9. The combination with a container, of a cap

permanently joined thereto, a pouring spout integral with the cap and having an outlet nozzle, an inlet arm having an outlet port opening into the cap, a casing inserted into the spout, a valve for preventing the flow of fluid from the casing to said port, said valve being adapted to open under the action of fluid flowing from the port to the casing, a flap valve carried by the casing above the first named valve for opening under the pressure of fluid being delivered but adapted to prevent return flow of the fluid, and a baffle carried by the casing between the valve and the nozzle, said baffle and casing being insertible into the spout through the bottom thereof prior to the application of the spout to the container.

10. In a device of the class described, a pouring spout including a cap having an outlet at one end, a casing insertible into the other end, a container insertible into the cap for holding the casing against withdrawal from the cap, means

for permanently joining the cap and container, a valve within and carried by the casing, and a baffle carried by the casing between the valve and outlet.

11. A device of the class described comprising a pouring spout including a cap having an outlet at one end, a casing insertible into the other end of the cap provided with a valved inlet and a valve outlet, an arm extending from the cap for connection with a supply and having a port opening into the cap and the valved inlet, a sealing gasket, a container insertible into the cap for engagement with the gasket to hold the casing in the spout and seal the connection between the casing and container, means for permanently joining the cap and container, and a baffle carried by the casing and interposed between the outlet valve and the outlet of the spout.

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