July 28, 1964 T. M. OLSON 3,142,320

DOUBLE TUBE DISPENSING DEVICE

Filed July 30, 1962

FIG. 1

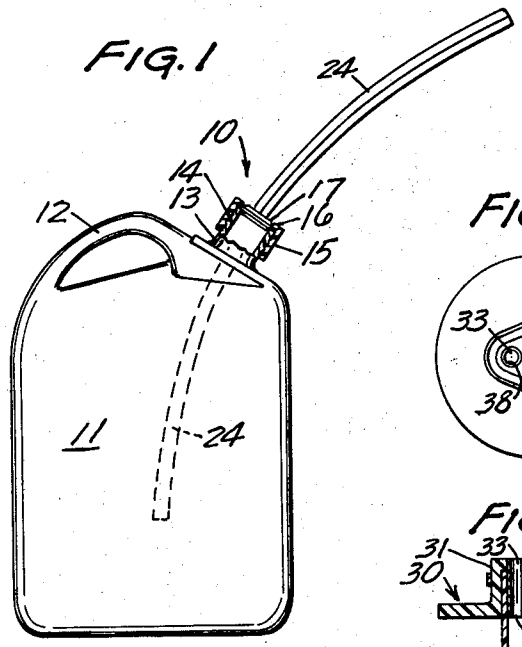


FIG. 2

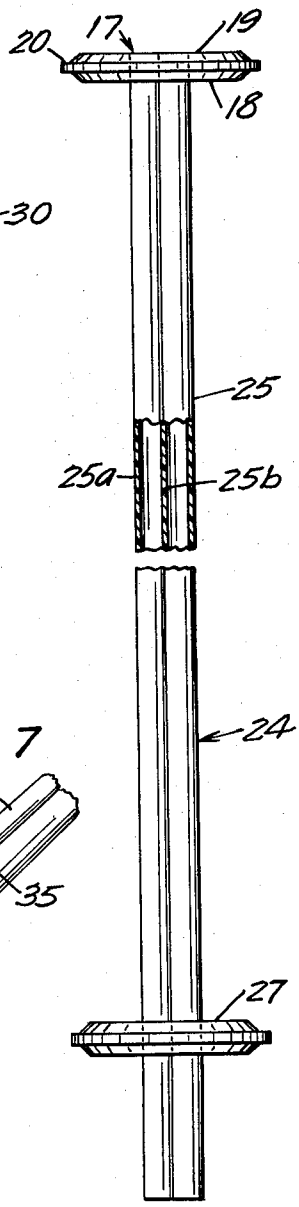


FIG. 5

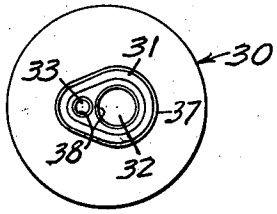


FIG. 6

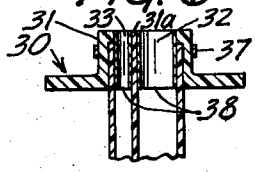


FIG. 4

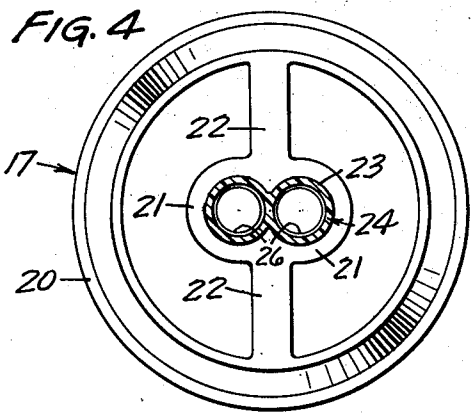


FIG. 7

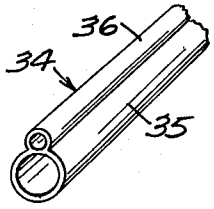
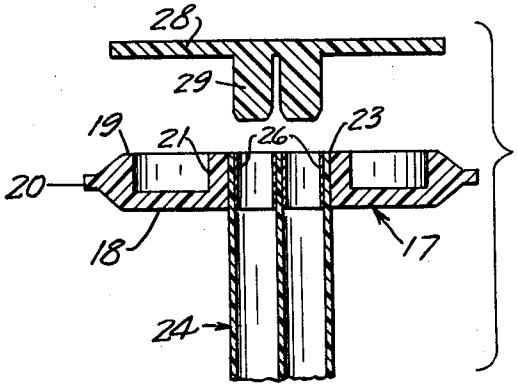


FIG. 3



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3,142,320

DOUBLE TUBE DISPENSING DEVICE

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This invention relates to a dispensing device and more specifically to a dispensing device for controlling the flow of liquid by action of gravity from one receptacle to another.

An object of this invention is to provide a novel liquid dispensing device, of simple and inexpensive construction, including a dual-passage flexible dispensing member, preferably formed of extruded plastic material and having provision for connection to the spout of a container whereby the flow of a liquid, such as gasoline or the like, poured by action of gravity from the container into a receptacle, such as a gasoline tank of an engine, will automatically cease when the discharge end of the double passage dispensing member is closed by the rising level of liquid within the receptacle.

Another object of this invention is to provide a novel and improved liquid dispensing device including tube holding means which may be readily clamped in place on a receptacle spout by the conventional receptacle open end cap and which has a dual-passage dispensing tube conneced thereto so that liquid may be dispensed from the receptacle and into another receptacle through one of the passages while the other passage of the dispensing member serves as an air conduit whereby the flow of liquid from one receptacle into the other receptacle will automatically cease when the outer end of the air passage is closed by the liquid within the liquid receiving receptacle.

A further object of this invention is to provide a novel and improved liquid dispensing device including an aperture tool holding member preferably constructed of flexible plastic material and being adapted to be clamped against the spout of a receptacle by the conventional open end cap, and being suitably apertured for receiving one end portion of an elongate flexible plastic dual-passage dispensing tubular member therein, and a closure member for closing the aperture tube holding member or dual-passage dispensing member when the device is not being used to dispense liquid from the receptacle.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like character references refer to the same or similar parts throughout the several views, and in which:

FIG. 1 is a side elevational view of one embodiment of my dispensing device shown in cooperating relation with a conventional receptacle with certain parts thereof broken away for clarity and other parts thereof illustrated in a different position by dotted line configuration;

FIG. 2 is a side elevational view on an enlarged scale of my dispensing device illustrated in FIG. 1, foreshortened and having parts broken away for clarity;

FIG. 3 is a detail sectional view on an enlarged scale of my dispensing device and including the closure means therefor;

FIG. 4 is a bottom plan view on an enlarged scale of my dispensing device;

FIG. 5 is a top plan view of a modified form of the tube holding member;

FIG. 6 is a cross sectional view taken approximately along 6—6 of FIG. 5 and looking in the direction of the arrows; and

FIG. 7 is a modified form of the tubular dispensing member used in conjunction with the tube holding member illustrated in FIG. 5.

Referring now to the drawings and more specifically to FIGS. 1 to 4 it will be seen that one embodiment of my novel liquid dispensing device, designated in its entirety by the reference numeral 10, is thereshown. My novel dispensing device 10 is illustrated in FIG. 1 in close cooperative relation with the liquid containing receptacle or container 11 which may be constructed of any suitable impervious material such as metal, plastic, glass or the like. It will be seen that the receptacle 11 is provided with a suitable carrying handle 12 and also has a generally cylindrical discharge spout 13 at the upper portion thereof. The discharge spout 13 is externally threaded as at 14 for threadedly accommodating an internally threaded open end cap 15. The upper terminal end of the cylindrical cap 15 is provided with an inturned annular flange 16 which normally serves to engage and retain a closure disc against the upper peripheral edge of the discharge spout 13. The closure disc which the annular flange of the cap 15 engages is separable from the cap so that the cap may be used to retain the various pouring spouts normally utilized with this type of container.

Many of the conventional liquid containers such as those used in storing and containing liquids such as gasoline, chemicals and the like have provision for connection of pouring spouts to the discharge spout of the container. However, provision is also made in these conventional receptacles or containers for venting the upper portion thereof in some manner to permit the liquid to flow through such as a pouring spout. When a person pours liquid from such a container into another receptacle, such as a gasoline tank of a gasoline engine, very little control is exercised over the flow of the liquid by the user and quite often the gasoline tank will be overfilled. It has further been found that most of the conventional pouring spouts do not permit smooth controlled flow of the liquid from one container into another so that splashing sometimes occurs which results in additional loss of the liquid. My new liquid dispensing device very nicely overcomes these problems.

It will be seen that my liquid dispensing device 10 includes a generally circular tube holding member 17 which is preferably constructed of flexible, slightly compressible plastic material such as polyethylene. It will be seen that this tube holding member 17 includes an upper surface 18 and a lower surface 19 and that the tube holding is thickened adjacent the marginal edge portion thereof. Referring again to FIG. 3 it will be seen that the thickened marginal edge portion of the tube holding member is tapered outwardly to define a reduced peripheral edge 20 which may be readily compressed into sealing engagement with the edge of the discharge spout 13 by the cap 15 as best seen in FIG. 1.

The tube holding member 17 is provided with a centrally located, axially extending, embossed portion 21 which is suitably reinforced by reinforcing ribs 22 extending between the embossed portion 21 and the thickened marginal portion of the tube holding member. The tube holding member 17 is provided with a centrally located recess or aperture 23 which extends through the embossed portion 21 as best seen in FIGS. 3 and 4. It will be seen that this recess or aperture is formed by a pair of substantially cylindrical openings arranged in side-by-side relation and each being of substantially the same cross sectional area. The recess 23 is of a size to very snugly accommodate one end portion of an elongate dispensing tube or member 24. This dispensing tube 24 which is of dual-passage construction is preferably formed of a flexible plastic material such as polyethylene in the manner of the tube holding member 17.

Referring now to FIGS. 2 to 4 it will be seen that the dispensing tube 24, which is formed by an extruding operation, includes a pair of dispensing tubular elements

25 and 25*a* which are integrally joined throughout their respective lengths by a common wall portion 25*b*. One end portion of the dispensing tube 24 is inserted into the recess 23 so that the terminal end of the dispensing tube is disposed in flush or coplanar relation with respect to the edge of the embossed portion 21 as best seen in FIG. 3. Thus when the tube holding member 17 is clamped against the upper peripheral edge of the discharge spout 13 of a container so that the upper surface 18 of the tube holding member is disposed uppermost, the dispensing tube 24 will project outwardly therefrom as best seen in FIG. 1.

Since the dual-passage dispensing tube 24 is somewhat flexible, means are provided for maintaining the one end portion of the dispensing tube in snug fitting relation with respect to the aperture 23 of the tube holding member 17. To this end, a pair of relatively short, generally cylindrical or annular stiffening elements 26 are inserted into the ends of the tubular element 25 to thereby prevent the tubular element from bending or slightly collapsing inwardly. The stiffening elements 26 are formed of a substantially rigid plastic material and have outer diameters approximating but slightly larger than the internal diameters of the tubular elements 25 and 25*a* so that the latter are maintained in snug fitting relation within the recess 23.

Thus it will be seen that when the tube holding member 17 is connected to a container or receptacle 11 as illustrated in FIG. 1, the dispensing tube 24 serves to direct the liquid poured from the container into another container. Because of the flexible construction of the dual-passage dispensing tube 24, the dispensing tube may be readily bent to permit access to the interior of the liquid receiving chambers or receptacles of various constructions and configurations. When liquid is poured from the container 11 into another receptacle such as a gasoline tank of a conventional gasoline engine, the liqiud will flow through one of the dispensing tubular elements 25 or 25*a* and air will flow inwardly through the other of said tubular elements.

As the liquid passes through one of the dispensing tubular elements 25 or 25*a*, air will pass upwardly through the other of the tubular elements thus preventing the occurrence of a partial vacuum or negative pressure within the container 11. This permits the liquid to flow freely from the container 11 and this flow will continue until the end of the conduit serving as an air passage is closed by the rising level of liquid. It will therefore be seen that if the end of the dispensing tube 24 is inserted into a receptable which is to receive the liquid, then the level of liquid within the receiving receptacle can be controlled. Thus it will be seen that my liquid dispensing device 10 is especially adaptable for use in filling gasoline tanks of conventional internal combustion engines since the device will prevent the overflow of liquids from the tank.

Another important use for my novel dispensing device is that of filling or adding distilled water to conventional wet cell batteries. When so used it is essential not to overfill the batteries since the liquid electrolyte might bubble out through the apertures in the caps. Referring now to FIG. 2 it will be seen that means are provided for preventing further flow of the liquid into the receptacle such as a wet cell battery beyond predetermined level with respect to the filler cap of a battery. This means includes a liquid level determining member 27 which is of substantially identical construction to the tube holding member 17. It is also preferably constructed of a suitable corrosive resistant material such as plastic and is provided with an aperture for receiving the dispensing tube 24 therethrough in snug fitting relation. This liquid level determining member 27 may be adjusted to a predetermined position along the length of the dispensing tube 24 so that this member is spaced at a preset position with respect to the end of the dispensing tube through which the liquid is dispensed into the liquid receiving receptacle. Therefore when the liquid level determining member engages the upper surface of the battery circumscribing the filler opening of the cell to be filled, the lower end of the dispensing tube will be spaced a predetermined distatnce below this upper edge of the opening. The lower edge of the dispensing tube 24 will also be spaced a predetermined distance above the upper surfaces of the lead plates of the cell so that the proper level of liquid may be added to the battery. This liquid level determining member 27 also prevents the liquid from splashing outwardly of the receptacle being filled.

On some occasions a user will find it desirable to allow the dispensing device 10 to remain mounted on the container even though the latter is being stored or transported. Therefore means are provided for closing the dispensing device in sealing relation to prevent the accidental spilling of liquid through this dispensing device. Referring now to FIG. 3, it will be seen that this closure means includes a substantially circular closure cap 28 preferably constructed of suitable plastic material such as polyethylene and having a pair of closure elements 29 integrally formed with the central portion thereof and projecting axially therefrom.

These closure elements 29 are of generally cylindrical shape and are insertable into the ends of the tubular elements 25 and 25*a* respectively for closing the same. The preferred manner of closing the tubular elements 25 and 25*a* is to remove the cap 15 so that the tube holding member 17 may be inverted to permit the dispensing tube 24 to be extended into the interior of the container 11 as indicated by dotted line configuration in FIG. 1. The closure cap 28 may then be applied to the tube holding member so that the closure elements 29 extend into the respective tubular elements 25 and 25*a*. Thereafter the cap 15 may be applied to the discharge spout 13 of the container 11 to retain the dispensing device thereon. It is pointed out, however, that the closure cap 28 may also be used to close the outer end of the dispensing tube 24 by merely inserting the closure elements 29 into the outer ends of the tubular elements 25 and 25*a*.

Referring now to FIGS. 5 and 6 it will be seen that a modified form of the tube holding member is thereshown. This modified form of the tube holding member is designated generally by the reference numeral 30 and is of generally circular configuration and is also preferably constructed of a suitable flexible plastic material such as polyethylene. It will be noted, as best seen in FIG. 6, that this tube holding member is of substantially uniform thickness but is provided with a depending embossed porton 32 of generally pear-shaped configuration. A pair of openings 32 and 33 extend through this embossed portion 31 and completely through the tube holding member for receiving the dispensing tube therethrough. It will be noted that the opening 32 is substantially larger than the opening 33. It will also be noted, as best seen in FIG. 6, that the openings 32 and 33 actually communicate with each other except at the lower ends and separated by a wall portion 31*a*. It will also be noted that the cross-sectional areas of each of the openings 32 and 33 are not of uniform size throughout their axial extent through the embossed portion of the tube holder 30 so that the dispensing tube received therein does not project completely through the tube holding member. Again referring to FIG. 6 it will be seen that the upper portion of the openings 32 and 33 are enlarged to thereby accommodate the lower ends of the dispensing tube after the stiffening members carried by the latter are inserted therein. A reduced portion of the openings also cooperate with the wall 31*a* to define shoulders for engaging the ends of the dispensing tube.

Referring now to FIG. 7 it will be seen that the dispensing tube, designated generally by the reference numeral 34, and associated with the tube holding member 30 is thereshown. This dispensing tube 34 includes a

tubular dispensing element 35 and a tubular dispensing element 36 which are formed of extruded plastic material such as polyethylene and which are joined along their respective lengths by a common wall portion in the manner of the dispensing tube 24. It will be noted, however, that the dispensing tube element 35 is of substantially larger cross-sectional area than the dispensing tubular element 36. The dispensing tubular element 35 therefore serves as a liquid dispensing tube while the tubular element 36 serves as an air passage.

Means are provided for securely clamping the dispensing tube 34 in the embossed portion of the tube holding member and this means includes an annular metal ferrule 37 which may be clamped against the exterior surface of the embossed portion 31. Therefore when the ends of the tubular elements 35 and 36 are inserted into the openings 32 and 33, the metal ferrule or clamping element 37 retains the tubular elements in clamped relation within these openings. It is pointed out that suitable stiffening elements 38 formed of rigid material and of annular construction are inserted into the ends of the tubular elements 35 and 36 to rigidify and reinforce the clamped ends of the tubular elements in the manner of the stiffening elements 26 of the embodiment illustrated in FIGS. 1 to 4.

Although not shown in the drawings, the embodiment illustrated in FIGS. 5 to 7 may also be provided with a suitable closure means for closing the device when not being used to dispense a liquid from the container.

When the embodiment illustrated in FIGS. 5 to 7 is used in conjunction with a container such as the container illustrated in FIG. 1, the embossed portion 31 will be positioned uppermost with the dispensing tube 34 projecting outwardly therefrom. The cap 15 will engage and secure the tube holding member 30 in place against the spout 13 thereby premitting a user to readily control the amount and flow of liquid from the container into another receptacle. In this connection it is pointed out that the dispensing tube 34 is also constructed of a suitable flexible plastic material in the manner of dispensing tube 24.

From the foregoing it will be seen that I have provided a novel liquid dispensing device including a dual-passage dispensing tube which is readily attachable to the discharge spout of conventional liquid storage receptacles and which is operative to permit ready and controlled flow of the liquid from the container into another receptacle.

It will also be noted from the preceding paragraphs that my novel dispensing device is constructed of a flexible, noncorrosive material such as plastic and is readily adaptable for use in close combination with the open end closure cap associated with conventional containers such as fuel cans or the like whereby my dispensing apparatus has a special adaptability for use with small gasoline fuel cans and similar receptacles.

Thus it will be seen that I have provided a novel liquid dispensing device, which is not only of simple and inexpensive construction, but one which functions in a more efficient manner than any heretofore known comparable devices.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:

1. A liquid dispensing device for use in controlling the flow of liquid from one receptacle into another, said device comprising

a tube holding member formed of a flexible, slightly compressible plastic material and being insertable into a cylindrically shaped internally threaded cap of the type having both ends open and having an inturned annular flange at the upper end thereof, the cap threadedly engaging the externally threaded discharge spout of the receptacle,

the peripheral edges of said tube holding member being tapered outwardly to permit compression thereof between the annular flange of the cap and peripheral edges of the receptacle spout when said cap is in threaded engagement with the receptacle spout to thereby seal and close such a receptacle from the exterior,

said tube holding member having upper and lower surfaces and having a centrally located dispensing tube recess therein, said dispensing tube recess being formed by a pair of generally circular openings communicating radially throughout their axial extents with each other,

an elongate, flexible, liquid dispensing tube being formed of extruded plastic and including a pair of tubular elements integrally formed together along their lengths by a common wall portion, the inner diameter of each of said tubular elements being substantially uniform throughout the length thereof, one of said tubular elements comprising a liquid dispensing tube and the other of said elements serving as an air passage,

said dispensing tube having one end portion insertable in snug fitting relation within said dispensing tube recess so that the adjacent terminal edges of said tubular elements are disposed substantially coplanar with that portion of the lower surface of said tube holding member circumscribing said aperture whereby liquid will flow through the liquid dispensing passage from the receptacle into a second receptacle until the liquid within the latter rises to a level to close the end of the air conducting tubular element, a pair of relatively short cylindrical elements formed of rigid material and each being insertable into said one end portion of said tubular element to reinforce the one end portion thereof, and a substantially flat closure member having a pair of closure elements projecting therefrom our insertion into one of the respective ends of said tubular elements for closing the same.

2. The structure as defined in claim 1 and a level determining member substantially identical in shape and construction to said tube holding member and carried by said dispensing tube adjacent the respective other end thereof and cooperating and engageable with the second receptacle to close the access opening thereof and thereby permitting a predetermined length of said dispensing tube member to be inserted into the second receptacle to prevent the flow of liquid therein beyond a predetermined level.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,142,320 July 28, 1964

Theodore M. Olson

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 45, for "our" read -- for --.

Signed and sealed this 17th day of November 1964.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents