

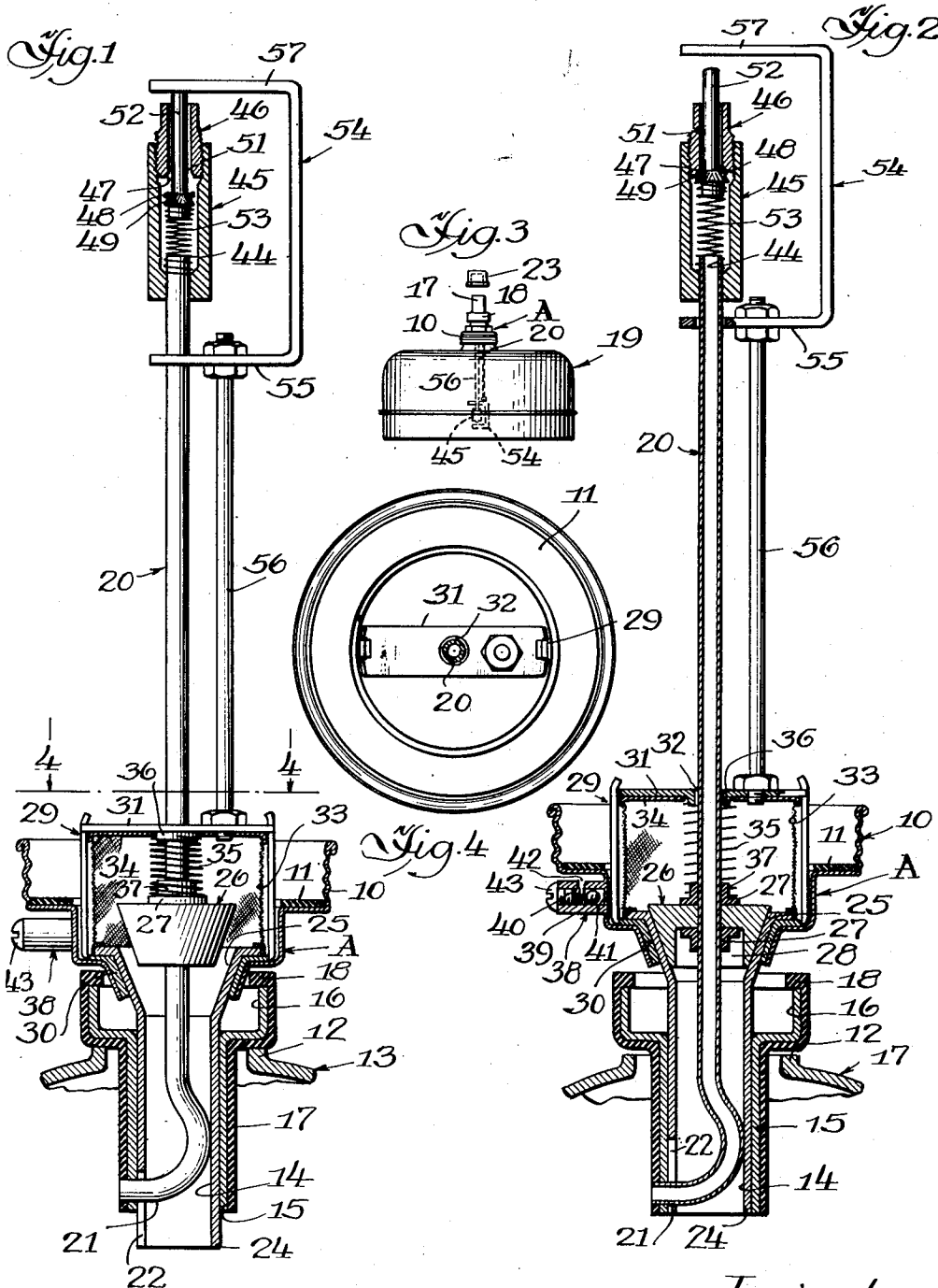
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LIQUID DELIVERY SPOUT ASSEMBLY

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LIQUID DELIVERY SPOUT ASSEMBLY

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10 Claims. (Cl. 226-123)

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The present invention relates to a liquid transfer device and more particularly to a novel fuel spout assembly for a can or container for quickly and safely dispensing or transferring liquid, such as fuel for an outboard or other motor or power unit, from a supply or delivery can or container to the motor or power unit.

Various types and constructions of dispensing or liquid transfer devices have been designed, but these have had various objectionable features, not only from the standpoint of their complexity of design and difficulty and cost of manufacture, but also from the method and manner of operation. Although the invention is not limited thereto, it has been illustrated as especially adapted to deliver or transfer liquid fuel to the supply tank of a motor, and it will be readily appreciated that when refueling a motor after the latter has been in operation for some time, great care must be taken to assure safety in the refueling operation by preventing spillage and leakage of the combustible fuel upon adjacent parts of the hot engine, and the escape of inflammable vapors.

The present invention obviates all of the objections of the prior devices and provides a liquid transfer or pouring spout for dispensing and transferring fuel in a novel and positive manner from a delivery or supply container to a fuel or other tank whereby the operator is assured of maximum safety in its use by reason of the novel means and manner of sealing and positive control of flow whereby all danger of spillage or leakage when the device is inverted is eliminated.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

The invention further resides in the construction, combination and arrangement of parts illustrated in the accompanying drawings, and while there is shown therein a preferred embodiment, it is to be understood that the same is susceptible of modification and change, and comprehends other details, arrangements of parts, features and constructions without departing from the spirit of the invention.

In the drawing:

Figure 1 is a view, part in side elevation and part in vertical cross section, taken longitudinally through the fuel spout assembly and the neck of a fuel tank to be supplied, the assembly being shown in the position the component parts occupy in pouring and transferring fuel from a delivery or supply can or container in which the

assembly is mounted to the fuel tank of a motor or other unit.

Fig. 2 is a view similar to Fig. 1 but with additional parts in longitudinal or vertical section and showing the relative position of the relatively movable parts when the spout assembly is being inserted into the neck of the fuel tank and before the parts are in feed pouring or transferring position.

Fig. 3 is a view in side elevation but on a greatly reduced scale showing the assembly in its upright and inoperative or closed position and attached to the neck of the usual pouring spout of a fuel delivery or dispensing can.

Fig. 4 is a view in horizontal cross section taken in a plane represented by the line 4-4 of Fig. 1.

In the drawings (Figs. 1 and 2) and in the following description of the present invention, the pouring spout or nozzle assembly is disclosed in its inverted position and inserted in the opening in a tank or receptacle for pouring or transferring liquid, such as gasoline or other liquid fuel, to the fuel tank of a motor or combustion engine which requires frequent re-fueling, but it is to be understood that the present device is detachably mounted upon the pouring neck of a delivery or supply can for supplying the liquid fuel to the tank.

Referring to the disclosure in the drawing and more particularly to the illustrative embodiment therein shown, the novel spout assembly for the transfer of fluid and especially gasoline or liquid fuel, from one container to another, comprises a unit assembly having a part thereof adapted to be inserted into the neck of a fuel supply or delivery can or container and provided with a screw cap or closure 10 having a sealing gasket 11 whereby to provide an air and liquid tight closure with the complementary threaded neck defining the discharge passage of the supply can or container.

Figs. 1 and 2 disclose the assembly up-ended or in the position it occupies when in an inverted, pouring position, with the discharge end of the pouring spout inserted into an opening in the neck 12 of a tank or other receptacle 13 to be supplied with the fuel. In the illustrative embodiment, such a tank or receptacle is shown as the fuel tank of a combustion engine or outboard motor, but it may be any tank or receptacle to be supplied with the liquid or fuel being dispensed. This pouring spout comprises a spout member 14 upon which is telescopically mounted a sleeve 15 having a cup-shaped or enlarged upper end 16, and an encompassing sleeve 17 of a rubber-like resilient sealing material unaffected by the fluid

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or fuel being dispensed and having its upper inter-
turned end 18 anchored over the end of the cup-
shaped enlargement 16 on the rigid sleeve 15.

The resilient sleeve 17 provides a flexible cover
for the discharge end of the nozzle or spout as-
sembly that prevents damage to the adjacent or
abutting surface and the threads of the tank or
receptacle to be supplied with the dispensed liquid
fuel. Frequently, such tanks are of a relatively
soft or light weight metal, such as aluminum,
which may be readily damaged by a metal to
metal contact and the weight of the filling or
supporting can and its contents to which the
assembly is attached.

Disposed within and projecting substantially
centrally through the pouring spout 14 and into
the interior of the supply or delivery can 19 (Fig.
3) is an air vent tube 20 having its lower curved
end 21 projecting laterally through a longitudi-
nally extending slot 22 in the outer or lower end
of the spout 14. This laterally projecting end 21
extends through and is anchored in aligned trans-
verse or radially extending openings in the en-
compassing sleeves 15 and 17 telescoped upon and
longitudinally moveable with respect to the spout
14. A cap 23 (Fig. 3) formed of a rubber-like
resilient material is adapted to be snapped over
and form a tight enclosure for the open pouring
end 24 of the spout 14 and the encompassing ends
of the concentric sleeves 15 and 17 when the
assembly is not in use or in upright position
whereby to seal off the contents or interior of
the can 19. This cap is removed before the spout
assembly and can are inverted for pouring.

The upper end 25 of the spout 14 is outwardly
tapered or of inverted conical shape to receive
therein a complementary, inverted conical-shaped
closure plug or valve 26 encompassing the air
vent tube 20 intermediate its ends. This valve or
sealing plug is of a rubber-like sealing material
and held in fixed position upon the air vent tube
by a pair of spacers 27, 27 (Fig. 2) press-fitted
or otherwise suitably secured upon the tube, one
of which abuts the enlarged upper end of the
sealing plug and the other disposed within the
hollow or recessed portion 28 of the plug and
seating against the base of the recess, whereby
the sealing plug or valve is secured to and mov-
able with the air vent tube 20 and the outer metal
sleeve 15 and resilient sleeve 17.

Affixed to the screw cap 10 is a guide bracket
and support 29 in the form of diametrically spaced
bars provided at one end with an annular inverted
cone-shaped base 30 conforming to and adapted to
receive and secure the upper end 25 of the pouring
spout member 14. Secured to this guide bracket
and support is a transverse retainer plate 31 pro-
vided with an opening 32 through which projects
the air vent tube 20 and by which this tube is
guided in its longitudinal movement. Mounted
within the confines of the guide bracket is a cylin-
drical filter screen 33 having an end plate 34
abutting the retainer plate 31, and within the
filter screen is a coil spring 35 encompassing at
one end a depending annular flange 36 defining
the opening 32 and at the other end the reduced
neck 37 on the upper surface of the adjacent
spacer 27. This spring is held under compres-
sion between the plate 34 and the spacer 27 for
spring-biasing the valve plug 26 to closed position.

An air relief valve 38 is provided to present
the supply or delivery can 19 from being dam-
aged by internal pressure. This valve comprises
a ball 39 and coil spring 40 in the cylindrical
housing of the valve for controlling the flow

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through a relatively small opening 41 in the cap
10 and a relatively small opening 42 in the cir-
cumferential wall of the housing of the relief
valve. A screw 43 seating against an end of the
coil spring 40 permits adjustment of the pressure
at which the relief valve opens. This permits the
novel spout assembly or device of the present
invention to be used with any gauge metal supply
or delivery can and the relief valve may be ad-
justed for any desired maximum pressure.

Upon the upper or inner end 44 of the air vent
tube is mounted an air valve housing 45 in the
form of a hollow sleeve-like member which is
preferably internally threaded at one end to re-
ceive the threaded upper end 43 of the air vent
tube. At its upper or inner end the housing 45
is internally threaded to receive a threaded valve
plug 46 provided with a valve seat 47 against
which is adapted to seat an O-ring 48 carried by
a conical enlargement 49 on the lower or inner
end of an air valve 51. This air valve is provided
with a valve stem 52 of less diameter or cross
section than the longitudinal opening or bore in
the valve plug 46 whereby to permit the passage
of air therethrough and through the air vent
tube 20 when the valve seat 47 is uncovered by
depressing the stem of the air valve 51.

Normally, this valve 51 is spring-biased to closed
position by a coil spring 53 seating at its upper
or inner end against the valve plug 46 and at its
lower or outer end encompassing the end 44 of
the air vent tube 20 and seating against a shoul-
der in the hollow of the air valve housing 45
about the upper or inner end 44 of the air vent
tube. To actuate the air valve 51, there is pro-
vided an air valve control bracket 54 mounted
by means of its lower bracket arm 55 upon the
upper threaded end of a rigid supporting rod 56,
the lower threaded end of this rod being securely
mounted in the retainer plate 31 by nuts or other
securing means.

The lower bracket arm 55 is provided with an
opening or aperture for receiving and guiding
therethrough the air vent tube 20 as it is moved
longitudinally, and the upper bracket arm 57 pro-
vides an abutment against which the stem 52 of
the air valve 51 abuts to unseat this valve when
the air vent tube 20 is elevated or moved longitu-
dinally or inwardly of the pouring spout member
14; i. e. when the sleeve 15 and its encompassing
resilient sleeve 17 are inserted into the opening
in the neck 12 of the fuel tank 13 and the sleeve
17 abuts or seats upon this neck so that the
weight of the can 19 and its contents forces the
pouring spout downwardly from the position of
Fig. 2 to the pouring or dispensing position of
Fig. 1.

In the operation of the novel pouring spout
assembly designated generally at A, the cap or
closure 10 thereof is screwed onto the neck of
the usual pouring opening or spout of a delivery
or supply can 19 containing the fuel or other
liquid to be dispensed. When the can is in an
upright position as in Fig. 3, it will be evident
that the parts of the present novel assembly are
in the relative position shown in Fig. 2 except
that the spout assembly will be in upright in-
stead of its inverted position as there shown, with
the bracket 54 and the air valve 51 depending
into the can 19. In this position the valve plug
26 is in its closed position and the air valve 51
controlling flow through the air vent tube 20 is
also closed, so that there is no danger of leakage
or spillage of the contents of the can. The air
relief valve 38 may be adjusted for any maximum

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internal pressure. A resilient cap 23 is preferably provided and is frictionally secured over the open end of the sleeves 15 and 17 to seal the open end thereof and prevent the entrance of dirt or other foreign particles.

It will further be evident that the can and its spout assembly may be tilted or inverted without danger of leakage or spillage of the contents of the can, and it is only when the cap 23 is removed and the projected end of the assembly is inserted into the neck 12 of the tank 13 and the weight of the can and its contents becomes effective to force the pouring spout member 14 downwardly away from the valve plug 28 while the sleeves 15 and 17 are held stationary against the neck 12 of the tank 13, that the air valve 51 is unseated by engagement with the bracket arm 57 so that air is permitted to flow upwardly through the air vent tube 29 and the valve plug 28 is unseated to allow for flow of the liquid around this plug and downwardly and outwardly through the spout opening.

Immediately upon raising the can 19 and withdrawing its spout assembly from the neck 12 of the tank 13, the coil spring 35 forces the valve plug 28 and the air vent tube 29 downwardly or outwardly to closed position whereby to stop the flow of liquid and simultaneously stop the flow of air by withdrawing the air valve 51 from contact with the upper bracket arm 57 whereupon the coil spring 53 biases the air valve to elevated, closed position. Thus the spout assembly A permits the can 19 to be tilted or inverted without danger of leakage or spillage of its contents.

Having thus disclosed the invention, I claim:

1. A liquid delivery spout assembly adapted to be detachably mounted on a delivery or supply can for dispensing the contents of the can into a receiving receptacle, comprising a cap for detachably mounting the assembly on the delivery opening of the can, telescoping sleeve members carried by the cap with the inner of these members fixed to the cap to provide a pouring spout and the outer member longitudinally slidable on the spout, a resilient covering affixed to the outer sleeve member to provide a flexible, sealing contact with the inlet of the receptacle, an elongated air vent tube extending through the inner sleeve member and having one end secured to and carried by the outer sleeve and opening to the exterior thereof and its other end projecting into the can, a valve member carried by said tube intermediate its ends for closing the passage through the pouring spout, and an air valve member carried at the other end of the vent tube for controlling the passage of air from the tank to be filled to the interior of the supply can whereby displacement of the outer sleeve member and the air vent tube with respect to the pouring spout opens the valve members.

2. A liquid delivery spout assembly adapted to be detachably connected to the usual pouring outlet of a delivery can for transferring the liquid content of the can to a receiving tank, comprising a cap member for detachably connecting the assembly to the outlet of the delivery can, telescoping sleeve members carried by the cap the inner of which opens into the delivery can and provided with a tapered inlet, the outer sleeve member being longitudinally movable on the inner member, an elongated air vent tube extending through the inner sleeve member but having its outer end attached to and carried by the outer sleeve member and thereat opening to the exterior of the outer sleeve member, the inner

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end of the air vent tube projecting into the delivery can, an air valve member at the inner end of the air vent tube for controlling the flow of air therethrough, a valve member affixed to and movable with the air vent tube intermediate its ends for closing passage through the inner sleeve member, and means for simultaneously controlling the opening of both valve members to allow for transfer of the liquid.

3. A liquid delivery spout assembly adapted to be detachably mounted on a delivery or supply can for dispensing the contents of the can into a receiving receptacle, comprising a cap for detachably mounting the assembly on the delivery opening of the can, telescoping sleeve members carried by the cap with the inner of these members fixed to the cap to provide a pouring spout and the outer member longitudinally slidable on the spout, an elongated air vent tube extending through the inner sleeve member and having one end secured to and carried by the outer sleeve and opening to the exterior thereof and its other end projecting into the can, a valve member carried by said tube intermediate its ends for closing the passage through the pouring spout, and a valve member carried at the other end of the air vent tube and disposed within the can for controlling the passage of air between the receptacle and the can, said valve members being moved to open position upon relative movement between the inner and outer sleeve members.

4. A liquid delivery spout assembly for detachable connection to a delivery can and for dispensing liquid from the can to a receiving tank, comprising a threaded cap for detachably connecting the assembly to the delivery can, concentric sleeves projecting from the pouring end of the spout assembly with the inner sleeve fixed to the cap and the outer sleeve being longitudinally slidable thereon, an elongated air vent tube projecting through the inner sleeve and having its outer end projecting through a longitudinal slot in the inner sleeve and secured to and opening through the outer sleeve whereby the air vent tube is carried thereby, the inner end of the air vent tube projecting a substantial distance beyond the cap and adapted to project into the delivery can, an air control valve carried at the inner end of the air vent tube and spring-biased to closed position, a liquid control valve for controlling discharge of the liquid in the can carried by the air vent tube intermediate its length and spring-biased toward closed position, said liquid control valve being opened whenever the delivery can is mounted in pouring position with its pouring spout inserted into the inlet of the receiving tank whereby to cause relative longitudinal movement between the inner and the outer sleeve, and means for opening the air valve simultaneously with the discharge valve to permit passage of air from the tank into the can.

5. A liquid delivery spout assembly for the transfer of liquid without leakage or spillage from a supply container to a receiving receptacle, comprising a cap member for attaching the assembly to the pouring opening of the supply container, a pouring sleeve connected to the cap member, a concentric sleeve slidably mounted on the pouring sleeve and adapted to seat and seal against the inlet of the receiving receptacle, a valve plug disposed in the pouring sleeve for controlling the passage therethrough of the liquid content of the supply container, an air vent tube projecting through the pouring sleeve and having its outer end opening through the concentric sleeve and

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adapted to open into the interior of the receiving receptacle during the pouring operation and its inner end projecting into the interior of the supply container, and a valve for controlling flow through the air vent, said valve and valve plug being carried by the air vent tube and the latter carried by the concentric sleeve whereby said air vent tube, its valve and the valve plug are movable simultaneously upon relative movement of the concentric sleeve with respect to the pouring spout.

6. A liquid delivery spout assembly for the transfer of liquid without leakage or spillage from a supply container to a receiving receptacle, comprising a cap member for attaching the assembly to the pouring opening of the supply container, a pouring sleeve connected to the cap member, a concentric sleeve slidably mounted on the pouring sleeve and adapted to seat and seal about the inlet opening of the receiving receptacle when the liquid is being transferred, an air vent tube projecting through the inner pouring sleeve and carried by the outer telescoping sleeve and adapted to open at one end into the receiving receptacle and at its other end into the supply container, a valve for controlling the passage of air through said vent tube, a valve for controlling the passage of liquid through said pouring spout, and means for controlling the opening of said valves when the pouring spout is inserted into the receiving opening of the receiving receptacle and the supply container is upended to pouring position.

7. In a liquid delivery spout assembly adapted to be detachably connected to the usual dispensing outlet of a delivery can for transferring the contents of the can to a receiving tank, a cap member for detachably mounting the assembly to the outlet of the delivery can, telescoping sleeve members the inner of which provides a pouring spout for the passage of the contents from the can to the tank and the outer of which is provided with an enlargement adapted to seat upon the tank about its inlet, an air vent tube projecting through the inner sleeve and carried by the outer sleeve and having one end open to the can and the other open to the receiving tank, means for controlling the passage of air through said vent tube, means for causing relative sliding movement between said sleeve members when the exposed telescoping ends thereof are inserted into the inlet of the tank with the can in inverted position and the enlargement of the outer sleeve seating upon the tank about the inlet, and a valve member controlling the flow of liquid through the inner member and automatically opened by the relative movement between said members.

8. In a liquid delivery spout assembly adapted to be detachably connected to the usual dispensing outlet of a delivery can for transferring the contents of the can to a receiving tank, a cap member for detachably mounting the assembly to the outlet of the delivery can, telescoping tubular members the inner of which provides a pouring spout for the transfer of the liquid from the can to the tank and the outer being slidable on the inner, an air vent tube projecting through the inner member and affixed to and movable with the outer member, a valve member for controlling the flow of liquid through the assembly from the can to the tank and carried by the air vent tube, means for spring-biasing said valve to closed position, a second valve member carried by the air vent tube for controlling the flow of air from the tank to the can, means for spring-biasing said

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second mentioned valve member to closed position, and means for opening these valve members when the discharge end of the assembly is inserted into the tank and the delivery can moved to pouring position.

9. In a liquid delivery spout assembly attached to a delivery can for the quick transfer of liquid fuel from the can to the tank of a motor and preventing the passage of the fuel until the discharge end of the spout assembly is inserted into the tank and the can is upended to pouring position, a closure member for detachably mounting the assembly upon the outlet of the can, telescoping and relatively longitudinally movable tubular members carried by the closure with the inner member open to the can for passage of the fuel therethrough, an air vent tube extending through the inner member and movable with the outer member and having one end open to the can and the other end open to the tank, valve means for controlling the passage of air therethrough, a valve member spring-biased to closed position in the inner tubular member but connected to the outer tubular member and movable therewith for controlling the passage of fuel from the can to the tank, said inner tubular member and said outer tubular member and valve being moved relative to each other when in pouring position with the outer discharge end of the pouring spout inserted into the inlet of the fuel tank and the outer tubular member seating upon the tank and sealing about the inlet opening, whereupon the weight of the can and its contents causes relative movement between said members to open the valve member and the valve means and permit the flow of fuel.

10. In a liquid delivery spout assembly attached to a delivery can for the quick transfer of liquid fuel from the can to the tank of a motor and preventing the passage of the fuel until the discharge end of the spout assembly is inserted into the tank and the can is upended to pouring position, a closure member for detachably mounting the assembly upon the outlet of the can, telescoping and relatively longitudinally movable tubular members carried by the closure with the inner member open to the can for passage of the fuel therethrough, a valve member spring-biased to closed position in the inner tubular member but connected to the outer tubular member and movable therewith for controlling the passage of fuel from the can to the tank, said inner tubular member and said outer tubular member and valve being moved relative to each other when in pouring position with the outer discharge end of the pouring spout inserted into the inlet of the fuel tank and the outer tubular member seating upon the tank and sealing about the inlet opening, whereupon the weight of the can and its contents causes relative movement between said members to open the valve and permit the flow of fuel, an air vent tube carried by the outer tubular member, a valve for controlling the passage of air through said tube and spring-biased to closed position, and means for opening said air valve when the assembly is in pouring position.

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