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VENTING ATTACHMENT FOR GASOLINE TANK FILLING NECKS

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Fig. 1.

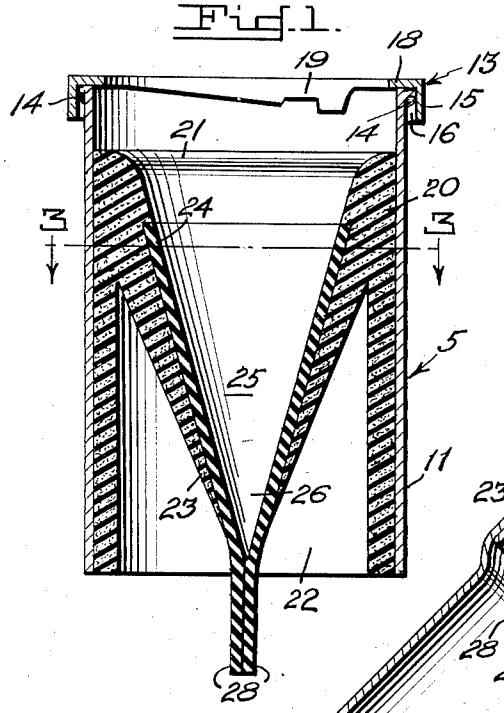

Fig. 2.

Fig. 3.

Fig. 4.

INVENTOR.
William Poznik
BY John N. Randolph
Attorney.

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VENTING ATTACHMENT FOR GASOLINE TANK FILLING NECKS

William Poznik, Brooklyn, N. Y.

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7 Claims. (Cl. 220—86)

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This invention relates to an improved construction of filling necks for gasoline tanks and more particularly to a filling neck especially adapted for use with motor vehicle gasoline tanks and having means for venting the tank during the filling thereof.

Trapped air and gasoline froth causes much waste of gasoline and waste of time in filling gasoline tanks from the conventional discharge nozzle of gasoline pumps and results in the appearance of carelessness on the part of the attendant when overflow of the tank results from either of such causes.

Accordingly, it is the primary object of the present invention to provide a filling neck for gasoline tanks having venting means whereby air trapped in the tank can be vented around the filling nozzle without affecting the flow from said nozzle and so that gasoline froth will be retarded and broken down into liquid and air permitting escape of the air and retention of the gasoline particles.

More particularly, it is an object of the present invention to provide a gasoline tank filling neck having an insert including a non-porous component adapted to closely engage around the discharge end of the nozzle and through which the gasoline is conveyed into the tank and having a porous or perforated surrounding body through which trapped air can escape around said non-porous component and the nozzle but which will prevent or materially retard any escape of gasoline therethrough.

Another object of the invention is to provide a device for the aforedescribed purpose capable of being employed as an attachment for filling necks of gasoline tanks.

Another object of the invention is to provide a venting attachment for filling necks of gasoline tanks which will readily adapt itself to discharge nozzles of different sizes and which will closely engage therearound to prevent escape of gasoline between said attachment and the nozzle.

Another object of the invention is to provide a device of the aforedescribed character which is normally closed and which is adapted to be opened by the application of a discharge nozzle thereto.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is an enlarged longitudinal, substantially central sectional view of the attachment;

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Figure 2 is a similar view on a reduced scale and partly in side elevation showing the attachment applied to the inlet end of the filling neck of a gasoline tank;

Figure 3 is a cross sectional view of the attachment taken substantially along a plane as indicated by the line 3—3 of Figure 1, and

Figure 4 is a perspective view, partly broken away of the attachment.

Referring more specifically to the drawing, for the purpose of illustrating a preferred application and use of the venting device, designated generally 5 and comprising the invention, a portion of a gasoline tank such as is utilized with a motor vehicle is indicated at 6 equipped with a filling neck 7 which extends upwardly or outwardly from an end or side thereof and which may, if desired, be formed of end sections connected by the collar 8 and clamps 9. The outer end of the filling neck 7 is internally and externally enlarged as seen at 10 to accommodate the attachment 5 although, if desired, said filling neck 7 may be of the same diameter throughout its length and either enlarged to accommodate said attachment 5 or the attachment may be reduced to fit the reduced outer end of the neck 7.

The attachment 5 includes a cylindrical outer wall or body 11 which is provided at one end thereof with an out-turned flange 12 which seats in a flanged ring 13 and may be secured thereto in any suitable manner as by soldering or welding, as indicated at 14. The annular flange portion 15 of the ring 13 is held in spaced relationship and concentrically around a portion of the body 11 by the outturned flange 12 to combine therewith to form an annular recess 16 adapted to receive the outer end of the neck portion 10 when the body 11 is inserted into said portion 10, as illustrated in Figure 2 and so that said flange 15 will engage around said edge portion of the filling neck. The body 11, including the ring 13 may be secured in any suitable manner as by soldering or welding as at 17 to the neck portion 10 for securing the attachment 5 thereto. The inwardly extending annular flange 18 of the ring 13 is provided with retaining means 19 by which a closure cap, not shown, may be quickly and easily secured thereto or removed therefrom.

A porous body or sleeve 20 is disposed in and has its periphery suitably secured to the internal side of the shell or annular wall 11 and the bore thereof is provided with a beveled outer end 21 disposed adjacent to but spaced from the ring 13. The opposite end of the sleeve or body member 20 is provided with an annular inwardly extend-

ing, inwardly tapered recess 22 which combines with the opposite, tapered end of the bore 21 to form an annular neck 23 which tapers in thickness toward the inner end of said sleeve or body member 20 and which is internally recessed, as seen at 24 to receive the enlarged, substantially conical shaped end 25 of a non-porous member or tube 26. The restricted, inner end of the tube 26 is provided with diametrically opposed substantially V-shaped cut-out portions 27, as best seen in Figure 2 forming corresponding flap members 28 at the restricted end of said tubular member 26.

The porous element 20 is preferably formed of a resilient material such as sponge rubber but may be formed of other porous or perforated material including certain ceramic material. If the element 20 is formed of a porous resilient material the resiliency of its neck portion 23 will readily function to cause the tubular member 26 to normally assume the position of Figures 1 and 4 and with the flaps 28 disposed in abutting engagement for closing the inner end of said tubular member 26. However, the tubular member 26 is preferably formed of a non-porous resilient material such as rubber and which, due to its own resiliency, can cause it to normally assume the closed position just previously described.

From the foregoing it will be readily apparent that the vent attachment 5 will assume the position as illustrated in Figure 1 when applied to the neck portion 10 and when the tank 6 is not being filled so that the tank 6 can be vented through the porous component 20 but the gasoline, not shown and gasoline froth within the tank 6 will be prevented from passing to above the porous component 20. To fill the tank 6, assuming the closure cap has been removed, the discharge end of a conventional hose nozzle 29 is inserted into the attachment 5 through the enlarged end 21 of the porous component 20 and is then forced into the enlarged conical end 25 of the tube 26. This will cause the conical tube portion 25 and the porous neck portion 23 to be expanded by the discharge end of the nozzle 29 for spreading the flaps 28 to open the inner, restricted end of the tube 26 and so that gasoline from the nozzle 29 can pass therethrough into the neck 7 and then into the tank 6. Furthermore, the pressure of the gasoline in the restricted, inner end of the tube 26 will further act to open said tube even though the tube is not opened by the discharge end of the nozzle 29. The conical tube portion 25 will engage yieldably about the discharge end of the nozzle 29 to form a seal therearound to prevent air or gasoline froth from passing outwardly through the tube 26 and around the nozzle 29. However, the tank and filling neck can be vented by the air passing into the chamber 22 and through the porous body or sleeve 20 but gasoline froth will be retarded and broken down so that only the air therefrom will escape through the porous body 20 to the atmosphere while the gasoline particles will be prevented from passing therethrough and will find their way by gravity back through the neck 7 to the tank 6. Thus it will be readily apparent that the tank 6 can be refilled more rapidly than is possible under conventional methods without danger of gasoline gushing from the open end of the filling neck as a result of trapped air or frothing of the gasoline.

Obviously, if desired, the sleeve or body 20 with the tube 26 applied and secured thereto, as illustrated, could be secured directly in the filling neck 7 adjacent its open end and various other modifications and changes are contemplated and

may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A vent attachment for the filling neck of a gasoline tank comprising a porous body member adapted to be disposed in a gasoline tank filling neck and having a bore extending therethrough adapted to receive the discharge end of a gasoline pump hose nozzle whereby the gasoline therefrom is adapted to pass freely through the inner end portion of said bore and through the filling neck to the tank, and said porous body member forming an escape for air therethrough and around the nozzle and a seal adapted to prevent gasoline from passing therethrough or around the outside thereof, and a substantially tubular lining of a non-porous material disposed in said bore and extending from adjacent its outer end and protruding from the inner end thereof.

2. A vent attachment for the filling neck of a gasoline tank comprising a porous body member adapted to be disposed in a gasoline tank filling neck and having a bore extending therethrough adapted to receive the discharge end of a gasoline pump hose nozzle whereby the gasoline therefrom is adapted to pass freely through the inner end portion of said bore and through the filling neck to the tank, and said porous body member forming an escape for air therethrough and around the nozzle and a seal adapted to prevent gasoline from passing therethrough or around the outside thereof, and a substantially tubular lining of a non-porous material disposed in said bore and extending from adjacent its outer end and protruding from the inner end thereof, said lining being formed of an expansible material.

3. A vent attachment for the filling neck of a gasoline tank comprising a porous body member adapted to be disposed in a gasoline tank filling neck and having a bore extending therethrough adapted to receive the discharge end of a gasoline pump hose nozzle whereby the gasoline therefrom is adapted to pass freely through the inner end portion of said bore and through the filling neck to the tank, and said porous body member forming an escape for air therethrough and around the nozzle and a seal adapted to prevent gasoline from passing therethrough or around the outside thereof, and a substantially tubular lining of a non-porous material disposed in said bore and extending from adjacent its outer end and protruding from the inner end thereof, said lining being formed of an expansible material, and the inner end thereof being normally closed and being adapted to be opened by the pressure of the gasoline from said nozzle.

4. A vent attachment for the filling neck of a gasoline tank comprising a porous body member adapted to be disposed in a gasoline tank filling neck and having a bore extending therethrough adapted to receive the discharge end of a gasoline pump hose nozzle whereby the gasoline therefrom is adapted to pass freely through the inner end portion of said bore and through the filling neck to the tank, and said porous body member forming an escape for air therethrough and around the nozzle and a seal adapted to prevent gasoline from passing therethrough or around the outside thereof, and a substantially tubular lining of a non-porous material disposed in said bore and extending from adjacent its outer end and protruding from the inner end thereof, said tubular lining including an outer, substantially conical end portion and an inner split end de-

fining flaps normally disposed in abutting engagement for closing the inner end of said attachment, said lining being formed of a flexible, expansible material adapted to be opened at its inner closed end by the pressure of the gasoline from the nozzle.

5. A vent attachment for the filling neck of a gasoline tank comprising a porous body member adapted to be disposed in a gasoline tank filling neck and having a bore extending therethrough adapted to receive the discharge end of a gasoline pump hose nozzle whereby the gasoline therefrom is adapted to pass freely through the inner end portion of said bore and through the filling neck to the tank, and said porous body member forming an escape for air therethrough and around the nozzle and a seal adapted to prevent gasoline from passing therethrough or around the outside thereof, and a substantially tubular lining of a non-porous material disposed in said bore and extending from adjacent its outer end and protruding from the inner end thereof, said lining being normally closed at its inner end by abutting flap portions forming integral parts thereof, and said porous body and lining being formed of resilient materials adapted to be expanded by the pressure of gasoline in the lining and the pressure of the discharge end of the nozzle for spreading said flaps for opening the inner end of said lining.

6. A vent attachment for the filling neck of a gasoline tank comprising a porous body member adapted to be disposed in a gasoline tank filling neck and having a bore extending therethrough

adapted to receive the discharge end of a gasoline pump hose nozzle whereby the gasoline therefrom is adapted to pass freely through the inner end portion of said bore and through the filling neck to the tank, and said porous body member forming an escape for air therethrough and around the nozzle and a seal adapted to prevent gasoline from passing therethrough or around the outside thereof, said porous body having an annular inwardly tapered recessed inner end.

7. An attachment as in claim 5, and a rigid shell or body to which said porous body is anchored, said shell being fixedly disposed in the filling neck.

WILLIAM POZNIK.

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