

PATENT SPECIFICATION

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(54) VENTED POURING SPOUT

(71) We, AMERICAN FLANGE & MANUFACTURING CO. INC., of 30 Rockefeller Plaza, New York, New York, 10020, United States of America, a Corporation organised under the laws of the State of Delaware, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to vented pouring spouts formed of synthetic plastics material which are adapted to be retracted in a stored position within a container opening and which can be pulled up to an extended pouring position for dispensing of the container contents, the spout having means for permitting the entry of air within the container through the pouring spout simultaneously with the liquid dispensing.

A longstanding problem in the field of liquid container dispensing has been that of providing some effective and economical means for eliminating surging or excessive gurgling during dispensing. Generally speaking, the solution to this problem resides in permitting the container interior to communicate with the atmosphere so that the liquid dispensed can be freely displaced with air. A simple solution is to provide an additional vent fitting in the container through which air can enter as the contents are dispensed. Such arrangements, however, regardless of their simplicity, overlook the requirements dictated by economics. Although attempts have been made to vent the container interior and dispense the container contents through a single opening, these attempts have not been wholly successful. Among the deficiencies exhibited by such single fitting arrangements brought forward to date has, first of all, been their inability to completely eliminate the surging action under all dispensing conditions.

Secondly, their construction, if effective in

venting, is such that the dispensing liquid flow is seriously reduced, particularly in the case of relatively viscous fluids. Finally, in certain instances the manufacture of the device or the necessary method of attachment to the container is sufficiently complicated as to offset any advantage of economy from the use of a single dispensing fitting.

According to the invention there is provided a vented pouring spout adapted to be pulled up from a retracted stored position within a container to an extended pouring position comprising a substantially cylindrical upper body portion, a circumferential lip at the upper end of said body portion for supporting said spout in retracted position, a lower body portion terminating in a spout base having a lower edge, an annular baffle axially spaced from said spout lower edge and connected thereto by a plurality of axially extending feet forming a series of radially directed openings therebetween and circumferentially spaced about said spout base and a central aperture located in said baffle whereby liquid is dispensed through said central aperture while venting air is simultaneously introduced into the container through said spout and one or more of said radially directed openings.

The invention also provides a fluid dispensing closure fitting for a container, comprising, an annular dispensing nozzle including a cylindrical throat terminating in a lowermost free edge, a container wall engaging surface surrounding said nozzle throat, closure engaging means formed on the upper end of said nozzle, spout supporting means formed within said nozzle throat, a self-venting pouring spout adapted to be pulled up from a retracted stored position within said container to an extended pouring position, wherein said spout comprises a substantially cylindrical upper body portion, means formed on the upper

end of said body portion for engaging said spout supporting means within said throat when said spout is in said retracted stored position, a lower body portion terminating in a spout base, an annular baffle having a central aperture spaced from the lower edge of said spout base and connected thereto by a plurality of projections circumferentially spaced around said lower edge, said projections engaging the lowermost free edge of the nozzle throat to limit the outward extension of said spout in its extended pouring position, said projections, said annular baffle and said lower edge of the spout base defining a plurality of radially oriented passages, fluid being dispensed by said spout in its extended pouring position while venting air is simultaneously introduced into the container through said spout and one or more of said radially oriented passages.

The spout of this invention is advantageously fabricated as a one piece self-venting pouring spout which is economically moulded of a synthetic plastics material, and incorporates container venting means in conjunction with supporting means for rigidly retaining the spout in its pouring position.

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of the vented pouring spout of this invention;

Figure 2 is a part-elevational and part-sectional view of the pouring spout in its retracted stored position within a closure nozzle;

Figure 3 is a view similar to Figure 2, but showing the nozzle inserted in a container with the spout in extended pouring and venting position;

Figure 4 is an enlarged fragmentary view showing the engagement of the spout base with the nozzle; and

Figure 5 is a bottom plan view of the pouring spout.

As seen in Figure 1 the vented spout 1, which is moulded of a synthetic plastics material, has a cylindrical body 2 terminating at its upper end in a circumferential lip 3. A semi-circular lifting bail 4 is hingedly connected to the lip 3 at diametrically opposed points 5. At its lower end the cylindrical spout body has an outwardly tapered portion 6 terminating in a lower edge 7. Four equally spaced radially enlarged feet 8, having upwardly facing surfaces 9, extend axially below the lower edge 7, and are integrally connected to an annular baffle 10. The baffle 10 is provided with a central aperture 11 as seen in Figures 4 and 5 and is axially spaced from the lower

edge 7 so as to form four radially directed openings 12.

The spout 1 is retained within a closure fitting 13, also moulded of synthetic plastics material and as shown in Figures 2 and 4 comprises a nozzle 14 having an internal cylindrical throat 15. The throat 15 has a lower portion of reduced diameter as indicated at 16 forming a spout retaining ledge 17, (Figure 2).

A container wall engaging surface 18 is formed along the lower exterior of the nozzle throat 15 and a circumferentially enlarged cap-receiving bead 19 is formed about the upper end of the nozzle 14. The uppermost end of the nozzle throat 15 is closed off by a tear-out sealing diaphragm 20 having an integrally formed ring pull 21 for enabling the tearing-out of the seal. A captive snap-cap 22 is connected by a strap 23 to the nozzle 14 for frictional engagement over the nozzle bead 19.

The fully assembled closure fitting is pressed into a closure receiving opening 24 formed in the head 25 of a container 26. As seen in Figures 2 and 3, the container opening 24 bites into the nozzle surface 18 forming a leakproof joint.

In operation, the container is supplied to the filler who performs the filling operation through the opening 24 and presses the nozzle 13 into the opening, sealing the container for shipment. The user of the container opens the snap cap 22, and tears away the sealing diaphragm 21 by means of the ring pull 21, exposing the readily grasped spout bail 4. The spout 1 is then pulled up to its extended pouring position. The pouring action of the spout is illustrated in Figure 3 from which it can be seen that the container contents are dispensed through the central aperture 11 in the spout baffle 10 simultaneously with the entry of air into the spout and through the openings 12. Regardless of the rotational orientation of the spout 1, the baffle 10 effectively separates the outgoing fluid from the incoming air with the radially directed openings 12 providing a direct, unimpeded path for air to communicate with the interior of the container. In addition, the openings 12 are so formed in conjunction with the spout supporting feet 8 as to minimize the spout extension within the container during pouring to facilitate emptying of the container.

The described invention presents an effective solution to the problem in providing a new pouring spout designed to simultaneously dispense a container contents and vent the container interior to the surrounding atmosphere. The spout has a simple unitary construction which facilitates rapid, gurgle free pouring while permitting

the entry of atmospheric air through the spout into communication with the container interior. This is accomplished by forming radially opening air passages about the circumference of the spout base in conjunction with spout supporting means. An annular baffle is also provided at the innermost end of the spout for separating the dispensing liquid flow from the incoming air supply.

Accurate, gurgle free dispensing is economically accomplished through the provision of the above described self-venting pouring spout applied to a container as a single dispensing fitting thus eliminating the need for a separate vent fitting in the container.

WHAT WE CLAIM IS:—

1. A vented pouring spout adapted to be pulled up from a retracted stored position within a container to an extended pouring position comprising a substantially cylindrical upper body portion, a circumferential lip at the upper end of said body portion for supporting said spout in retracted position, a lower body portion terminating in a spout base having a lower edge, an annular baffle axially spaced from said spout lower edge and connected thereto by a plurality of axially extending feet forming a series of radially directed openings therebetween and circumferentially spaced about said spout base and a central aperture located in said baffle whereby liquid is dispensed through said central aperture while venting air is simultaneously introduced into the container through said spout and one or more of said radial openings.
2. A pouring spout according to claim 1 wherein said spout lip includes a semi-circular hinged bail by means of which the spout can be brought to its pouring position.
3. A pouring spout according to claim 1 or claim 2 wherein said spout lower portion tapers radially outwardly in the direction of said lower edge.
4. A pouring spout according to any one of claims 1 to 3 wherein said spout base feet project radially outwardly beyond said spout body lower edge forming a support for said spout in the extended pouring position.
5. A pouring spout according to any one of claims 1 to 4 wherein said spout is moulded of synthetic plastics material.
6. A fluid dispensing closure fitting for a container comprising an annular dispensing nozzle including a cylindrical throat terminating in a lowermost free edge, a container wall engaging surface surround said nozzle throat, closure engaging means formed on the upper end of said nozzle, spout supporting means formed within said nozzle throat, a self-venting pouring spout

adapted to be pulled up from a retracted stored position within said container to an extended pouring position, wherein said spout comprises a substantially cylindrical upper body portion, means formed on the upper end of said body portion for engaging said spout supporting means within said throat when said spout is in said retracted stored position, a lower body portion terminating in a spout base, an annular baffle having a central aperture spaced from the lower edge of said spout base and connected thereto by a plurality of projections circumferentially spaced around said lower edge, said projections engaging the lowermost free edge of the nozzle throat to limit the outward extension of said spout in its extended pouring position, said projections, said annular baffle and said lower edge of the spout base defining a plurality of radially oriented passages, fluid being dispensed by said spout in its extended pouring position while venting air is simultaneously introduced into the container through said spout and one or more of said radially oriented passages.

7. A fluid dispensing closure fitting according to claim 6 and including a closure member in engagement with said closure engaging means on said nozzle.

8. A fluid dispensing closure fitting according to claim 6 or claim 7 wherein said nozzle throat is sealed off with a tamperproof tear out diaphragm.

9. A fluid dispensing closure fitting according to claim 8 wherein said tear out diaphragm has a pull member to facilitate removal thereof.

10. A fluid dispensing closure fitting according to any one of claims 6 to 9 wherein said spout base includes a lower edge formed on said spout lower portion and said nozzle engaging means on said spout base extend axially from said spout base lower edge.

11. A fluid dispensing closure fitting according to any one of claims 6 to 10 wherein said spout base lower edge and said nozzle lowermost free edge lie in a common plane with said spout in the extended pouring position.

12. A fluid dispensing closure fitting according to any one of claims 6 to 11 wherein said nozzle engaging means on said spout base extend radially outwardly beyond said spout base lower edge.

13. A fluid dispensing closure fitting according to any one of claims 6 to 12 wherein said baffle is connected to the lowermost ends of said nozzle engaging means on said spout base.

14. A self-venting pouring spout as hereinbefore described with reference to the accompanying drawing.

the entry of atmospheric air through the spout into communication with the container interior. This is accomplished by forming radially opening air passages about the circumference of the spout base in conjunction with spout supporting means. An annular baffle is also provided at the innermost end of the spout for separating the dispensing liquid flow from the incoming air supply.

Accurate, gurgle free dispensing is economically accomplished through the provision of the above described self-venting pouring spout applied to a container as a single dispensing fitting thus eliminating the need for a separate vent fitting in the container.

WHAT WE CLAIM IS:—

1. A vented pouring spout adapted to be pulled up from a retracted stored position within a container to an extended pouring position comprising a substantially cylindrical upper body portion, a circumferential lip at the upper end of said body portion for supporting said spout in retracted position, a lower body portion terminating in a spout base having a lower edge, an annular baffle axially spaced from said spout lower edge and connected thereto by a plurality of axially extending feet forming a series of radially directed openings therebetween and circumferentially spaced about said spout base and a central aperture located in said baffle whereby liquid is dispensed through said central aperture while venting air is simultaneously introduced into the container through said spout and one or more of said radial openings.

2. A pouring spout according to claim 1 wherein said spout lip includes a semi-circular hinged bail by means of which the spout can be brought to its pouring position.

3. A pouring spout according to claim 1 or claim 2 wherein said spout lower portion tapers radially outwardly in the direction of said lower edge.

4. A pouring spout according to any one of claims 1 to 3 wherein said spout base feet project radially outwardly beyond said spout body lower edge forming a support for said spout in the extended pouring position.

5. A pouring spout according to any one of claims 1 to 4 wherein said spout is moulded of synthetic plastics material.

6. A fluid dispensing closure fitting for a container comprising an annular dispensing nozzle including a cylindrical throat terminating in a lowermost free edge, a container wall engaging surface surround said nozzle throat, closure engaging means formed on the upper end of said nozzle, spout supporting means formed within said nozzle throat, a self-venting pouring spout

adapted to be pulled up from a retracted stored position within said container to an extended pouring position, wherein said spout comprises a substantially cylindrical upper body portion, means formed on the upper end of said body portion for engaging said spout supporting means within said throat when said spout is in said retracted stored position, a lower body portion terminating in a spout base, an annular baffle having a central aperture spaced from the lower edge of said spout base and connected thereto by a plurality of projections circumferentially spaced around said lower edge, said projections engaging the lowermost free edge of the nozzle throat to limit the outward extension of said spout in its extended pouring position, said projections, said annular baffle and said lower edge of the spout base defining a plurality of radially oriented passages, fluid being dispensed by said spout in its extended pouring position while venting air is simultaneously introduced into the container through said spout and one or more of said radially oriented passages.

7. A fluid dispensing closure fitting according to claim 6 and including a closure member in engagement with said closure engaging means on said nozzle.

8. A fluid dispensing closure fitting according to claim 6 or claim 7 wherein said nozzle throat is sealed off with a tamperproof tear out diaphragm.

9. A fluid dispensing closure fitting according to claim 8 wherein said tear out diaphragm has a pull member to facilitate removal thereof.

10. A fluid dispensing closure fitting according to any one of claims 6 to 9 wherein said spout base includes a lower edge formed on said spout lower portion and said nozzle engaging means on said spout base extend axially from said spout base lower edge.

11. A fluid dispensing closure fitting according to any one of claims 6 to 10 wherein said spout base lower edge and said nozzle lowermost free edge lie in a common plane with said spout in the extended pouring position.

12. A fluid dispensing closure fitting according to any one of claims 6 to 11 wherein said nozzle engaging means on said spout base extend radially outwardly beyond said spout base lower edge.

13. A fluid dispensing closure fitting according to any one of claims 6 to 12 wherein said baffle is connected to the lowermost ends of said nozzle engaging means on said spout base.

14. A self-venting pouring spout as hereinbefore described with reference to the accompanying drawing.



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15. A fluid dispensing closure as
hereinbefore described with reference to
the accompanying drawing.

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