Nov. 17, 1964 G. L. KITTERMAN 3,157,323

VALVE CLOSURE FOR BOTTLES AND THE LIKE

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Fig. 1.

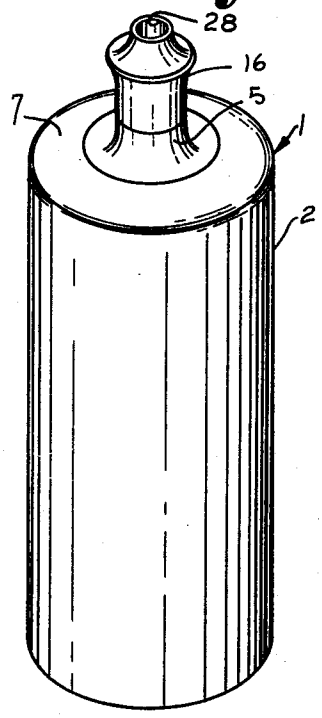



Fig. 2.

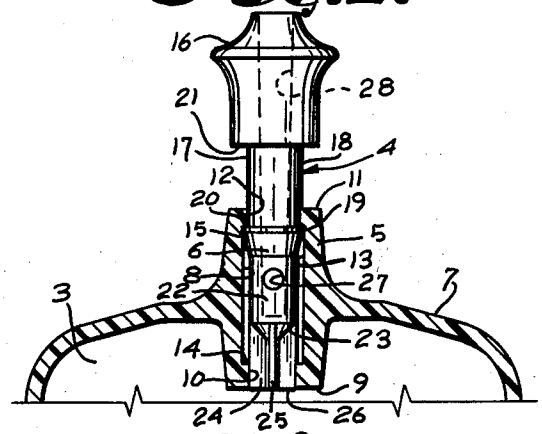



Fig. 3.

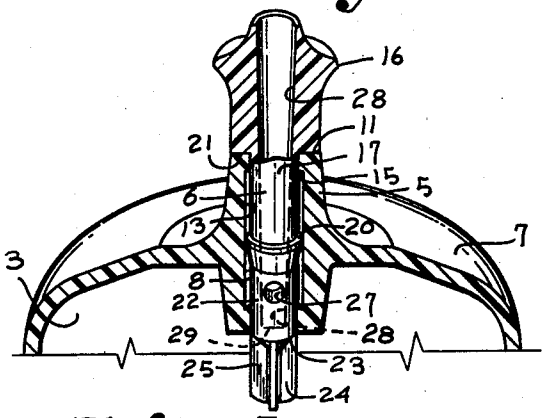



Fig. 4.

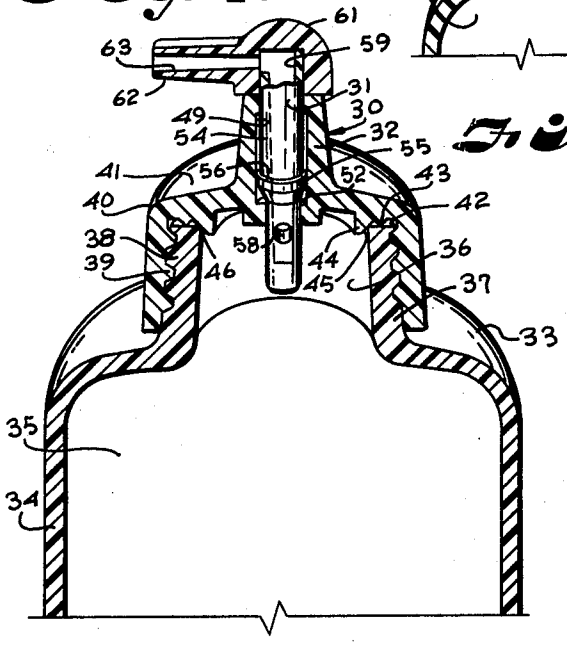
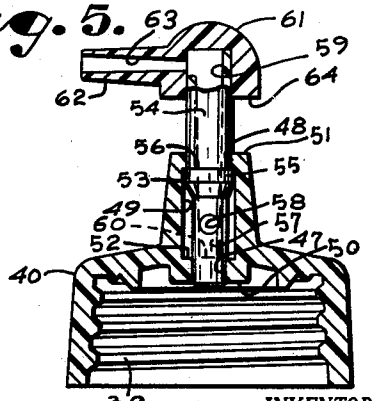



Fig. 5.




INVENTOR.
GARY L. KITTERMAN
BY
Fishburn and Gold
ATTORNEYS

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Fig. 6.

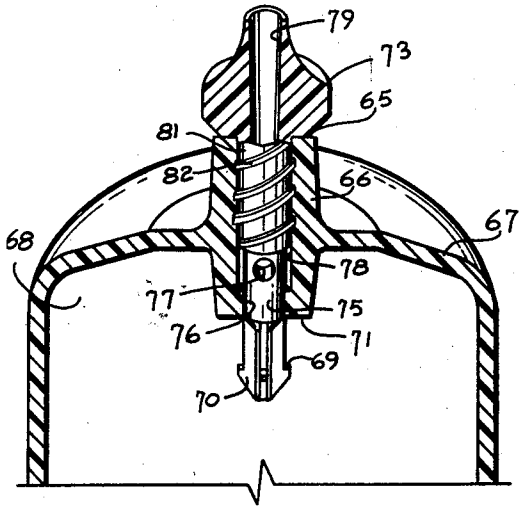



Fig. 7.

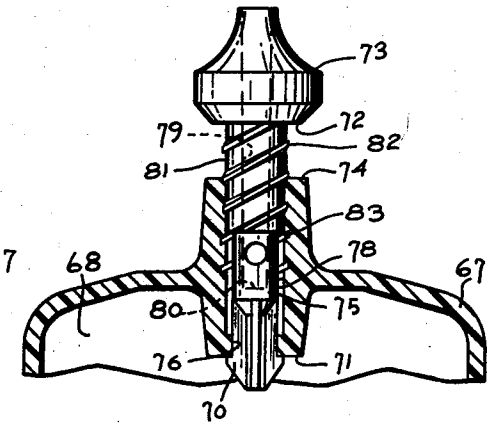



Fig. 8.

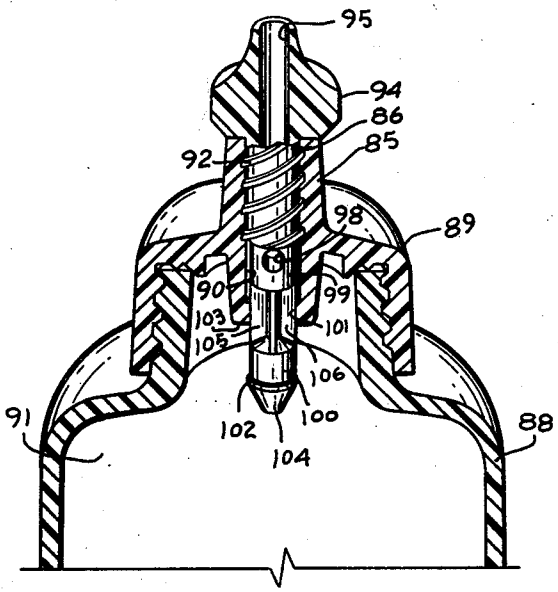
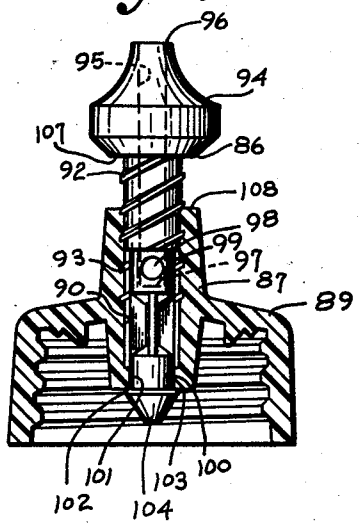



Fig. 9.




INVENTOR.
GARY L. KITTERMAN
BY
Fishburn and Gold
ATTORNEYS

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Fig. 10.

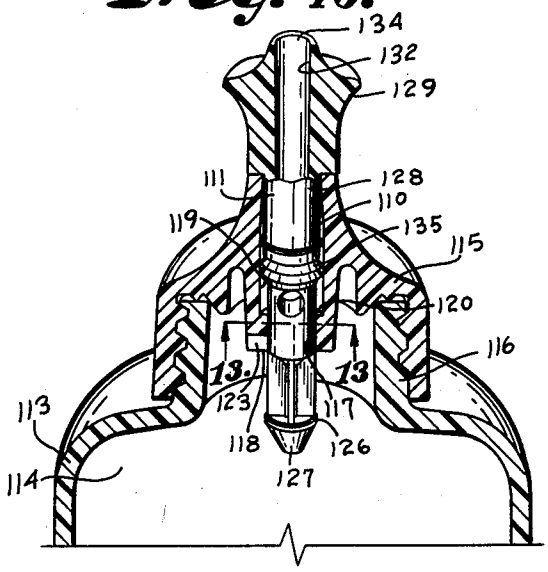



Fig. 11.

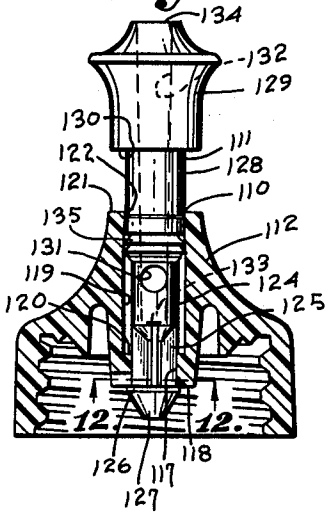



Fig. 12.

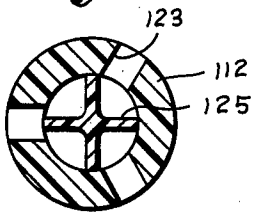



Fig. 13.

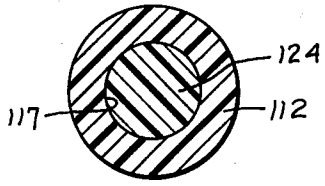
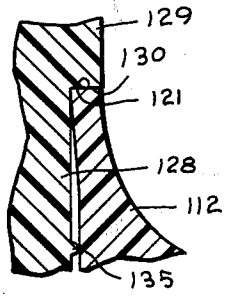



Fig. 14.




INVENTOR.
GARY L. KITTERMAN
BY
Fishburn and Gold
ATTORNEYS

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# VALVE CLOSURE FOR BOTTLES AND THE LIKE

Gary L. Kitterman, % National Products Co., 6100 Wilson Ave., Kansas City, Kans.

Filed Apr. 12, 1961, Ser. No. 102,530
9 Claims. (Cl. 222—520)

This invention relates to containers for flowable materials such as fluids, powders and the like, and more particularly to dispensing closures for containers such as bottles and the like with a movable valve member for controlling the dispensing of the contents.

The principal objects of the present invention are to provide a container with a dispensing closure structure having a valve member for sealing the container against leakage of contents and with said valve member being movable to form a discharge channel for the contents of the container; to provide a dispensing valve structure wherein the valve casing is a part of the container and is formed during the manufacture thereof as by molding; to provide such a structure wherein the valve casing is integral with the container and valve engaging portions formed by a core in the molding thereof; to provide such a structure with an elongate tubular portion and a valve member movable therein with one of said members being of resilient material with mating surfaces resiliently engaged to prevent leakage when the valve member is in closed position; to provide a closure structure wherein the container includes an elongate portion having a through passage and a valve member in said passage with mating portions for sealing and ports in said valve member positioned for selective flow therethrough in dispensing of material from the container; to provide such a structure wherein the container or valve casing portion thereof is molded of flexible resilient material with the discharge passage having molded valve-engaging shoulders and surfaces thereof; to provide such a structure wherein the discharge passage containing portion is on a cap or the like adapted to be removably secured on a container; to provide a dispensing valve structure wherein the valve member includes a head portion exteriorly of the container and has a channel extending from said head portion and through the shank to an opening communicating with an enlarged portion of the valve mounting passage with portions of the valve member arranged whereby movement thereof to open position forms a channel communicating with the interior of the container; to provide such a structure wherein the container has an elongated body with a through bore in which the valve member is mounted wherein said body portion has a reduced section defining a cylindrical bore adjacent the inner end adapted to have resilient or interference sealing engagement with a cylindrical portion of the valve member in closed position; and to provide a dispensing closure having only two relatively movable parts to form the control of the dispensing of the contents of the container, and that is economical to manufacture, and is simple yet positive and efficient in operation.

Other objects and advantages of this invention will become apparent from the following description taken in connection with accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a container having a closure embodying the features of the present invention.

FIG. 2 is a partial elevational view of the closure with the valve in open or dispensing position, the container being broken away to illustrate the relationship of the parts.

FIG. 3 is a partial perspective view of the container and closure with the closure valve in closed position, with portions broken away to illustrate the structure thereof.



FIG. 4 is a partial perspective view of a container and modified form of closure with portions broken away to illustrate the structure thereof, the valve being in open position.

FIG. 5 is an elevational view of the container closure illustrated in FIG. 4 with the valve shown in closed position and portions broken away to illustrate the structure thereof.

FIG. 6 is a partial perspective view of another modified form of container and closure with the valve in closed position and portions broken away to illustrate the structure thereof.

FIG. 7 is an elevational view of a container and closure illustrated in FIG. 6 with the valve in open position and portions broken away to illustrate the structure thereof.

FIG. 8 is a partial perspective view of another modified form of container and closure with the valve in open position and portions broken away to illustrate the structure thereof.

FIG. 9 is an elevational view of the closure structure illustrated in FIG. 8 with the valve in closed position and with portions broken away to illustrate the relative location of parts thereof.

FIG. 10 is a partial perspective view of still another modified form of container and closure with the valve in closed position and portions broken away to illustrate the structure thereof.

FIG. 11 is an elevational view of the closure structure illustrated in FIG. 10 with the valve in open position and with portions broken away to illustrate the relationship of the parts thereof.

FIG. 12 is a transverse sectional view through the closure structure taken on the line 12—12, FIG. 11.

FIG. 13 is a transverse sectional view through the closure structure taken on the line 13—13, FIG. 10.

FIG. 14 is an enlarged detail sectional view of the upper portion of the valve casing and valve member illustrating the sealing engagement therebetween.

Referring more in detail to the drawings:

This invention contemplates a structure wherein a dispensing valve is arranged to control discharge of flowable materials such as fluid, liquid, liquid and solid suspensions and like contents from a container and the casing of the valve serves as one end of the container. The invention further contemplates such a structure wherein the valve casing forms a valve-receiving receptacle in which a valve member is movably mounted and the surfaces of the receptacle engaged by the valve member are formed by a core or the like in the making of the valve casing and container by molding or the like. The invention further contemplates a valve structure wherein the casing and/or valve member are molded of flexible resilient material such as suitable synthetic resins, for example, polyvinylchloride, polyethylene, polypropylene and other flexible plastics, wherein a resilient engagement between a cylindrical shank or portion of the valve member and a cylindrical bore provides a positive seal to prevent leakage of contents from the container when the valve member is in closed position. The invention further contemplates such a structure wherein movement-limiting shoulders on the valve member and casing are formed in the molding operation to limit movement of the valve member from open to closed position and retain the valve member assembled in the valve casing.

The reference numeral 1 generally designates a container in the form of a bottle or the like and having walls 2 defining a chamber 3 therein for containing material to be dispensed. A dispensing valve structure 4 on the container includes a valve casing 5 and a valve member 6. In the structure, as illustrated in FIGS. 1 to 3 inclusive, the valve casing or body 5 is in a container end wall 7 and has a passage or opening 8 extending there-

through preferably of a size whereby the bottle or container may be filled through said passage. The container is preferably molded or blown in a conventional manner of a suitable synthetic resin, preferably of a flexible and resilient nature, and the passage 8 formed by a rigid core which may be withdrawn outwardly longitudinally of the valve casing. In the structure illustrated, the valve casing or body 5 has an inner end portion 9 with a cylindrical bore 10 extending therein axially of the casing 5, and the outer end portion 11 has a coaxial cylindrical bore 12 extending therein. The body is provided with a counterbore 13 forming an enlarged portion which cooperates with the bores 10 and 12 to form the passage 8 and to define shoulders 14 and 15 respectively spaced from the inner and outer ends of the valve casing and providing the inner terminuses of the sealing bores 10 and 12. It is preferable that the bore 12 be larger than the bore 10 but smaller than the counter bore 13 whereby the shoulder 15 is of lesser width than the shoulder 14, said shoulder 15 being such that a passage forming core may be pulled from the passage due to the resiliency of the material in the valve casing without damage to the surfaces of the shoulders or bores.

The valve 4 has the valve casing 5 and a valve member 6 so arranged that the two parts form the operating structure of the dispensing valve. In the structure illustrated, the valve member 6 has a head 16 adapted to be arranged exteriorly of the container and at one end of a valve shank 17 which includes a cylindrical portion 18 extending from the head and of suitable size to form a sliding tight fit in the bore 12 whereby there is compression type seal between the surfaces of the bore 12 and the cylindrical portion 18 to form a seal therebetween. The shank has an enlarged portion or collar 19 preferably of a size to form a snug sliding fit in the counterbore 13 and to provide a shoulder 20 adapted to engage the shoulder 15 in the valve casing to limit the outward movement of the valve member relative to the casing, as illustrated in FIG. 2. The spacing between the collar shoulder 20 and the adjacent end 21 of the head cooperates with the length of the bore 12 to control the limit of movement of the valve member, the end 21 engaging the end 11 of the valve casing to limit the inward movement of the valve member relative to the casing. The valve shank converges inwardly from the collar 19 to a cylindrical portion 22 extending therefrom oppositely from the head, said cylindrical portion preferably being slightly larger than the bore 10 whereby when the cylindrical portion is positioned in the bore there is a tight resilient engagement of that portion of the valve casing with the cylindrical portion 22 to form a fluid-tight seal therebetween. The cylindrical portion 22 extends inwardly whereby when the valve member is positioned in closing position with the end 21 of the head engaging the end of the valve casing, as illustrated in FIG. 3, the inner end 23 of said cylindrical portion 22 is adjacent the inner end 9 of the valve casing. The portion of the shank extending from the end 23 of the cylindrical portion 22 is slotted or otherwise formed with openings or channels 24 providing communication from the chamber 3 of the container to the counterbore 13 when the valve member 6 is in open position, as illustrated in FIG. 2. In the structure illustrated, the lower portion of the valve stem is cut away to form spaced ribs or vanes 25 which provide guides engaging the bore 10 when the valve is in open position and are preferably of such length whereby the inner ends 26 of the vanes are at the inner end 9 of the valve casing or inwardly of the container, as illustrated in FIG. 2. The valve member is provided with a port 27 extending radially or laterally therethrough and communicating with the counterbore 13 in all positions of the valve member, said port providing communication with a bore 28 extending from a closed end 29 outwardly to form a discharge passage.

With the parts constructed as described, the valve member 6 is inserted in the valve casing 5 by inserting the vaned end into the bore 12 and moving the valve member inwardly toward the chamber 3 until the collar 19 passes into the counterbore 13. The valve is then ready for operation. When in open position, the contents of the container may flow through the channels 24 between the vanes 25 through the bore 10 into the counterbore 13 through the port 27 and into the bore or discharge passage 28. Escape of contents around the valve member is prevented by the resilient engagement of the collar 19 with the inner surface of the counterbore 13 and the engagement of the shoulder 20 with the shoulder 15 and the cylindrical portion 18 with the surface of the bore 12. When it is desired to close the container to seal the contents therein, the valve member is pushed inwardly to the position illustrated in FIG. 3 wherein the cylindrical portion 22 between the port 27 and the end 23 is engaged with the bore 10 to form a fluid-tight interference seal, preventing any flow of fluid from the container. This structure provides a very efficient valve and container of a minimum of parts that is easily manufactured with relative sizes to provide a positive resilient seal of the valve parts.

In the form of the invention illustrated in FIGS. 4 and 5, the dispensing valve 30 includes a valve member 31 and a valve casing 32, the valve casing being on a container 33. The valve casing may be on or connected with the container in any suitable manner, and, in the illustrated structure, the container has a wall 34 defining a chamber 35 with an opening 36 leading from the chamber through an upstanding neck 37. The neck has external screw threads 38 adapted to be engaged by internal threads 39 on a cap-like structure 40 which has an end wall 41 with the valve casing 32 integral therewith. When the cap is threaded onto the neck to a sealed position, the upper flat surface 42 of the neck engages a depending rib 43 on the cap and a second rib 44 concentric therewith and spaced inwardly therefrom has an inclined surface 45 that is moved into tight engagement with the edge 46 at the outer end of the opening 36 to form a wedge type interference seal between the cap and bottle. The valve casing 32 is generally upstanding from the wall 41 of the cap or container and has an inner bore 47 coaxial with an outer bore 48 with a counterbore 49 therebetween whereby the ends of the counterbore terminate in spaced relation to the inner end 50 and outer end 51 of the valve casing, and form shoulders 52 and 53 respectively. The bore 48 is larger than the bore 47 but smaller than the counterbore 49 whereby the shoulder 53 is narrower than the shoulder 52, the shoulder 53 being such that a core forming the bores 47, 48 and counterbore 49 may be pulled therefrom without damaging the surfaces formed thereby. The valve member 31 preferably includes a cylindrical shank 54 tightly sleeved in the bore 48 and having a collar 55 slidably received in the counterbore 49, the collar forming a shoulder 56 adapted to engage the shoulder 53 when the valve member is moved to its outermost position. The collar portion converges inwardly to a cylindrical valve portion 57 which extends through the bore 47 when the shoulder 56 engages the shoulder 53, the cylindrical portion 57 being a tight sliding fit in the bore 47 to provide resilient engagement and seal. The length of the counterbore 49 may be such relative to the collar 55 whereby the lower end of the collar will engage the shoulder 52 to limit inward movement of the valve, if desired. At such innermost position, a port 58 extending laterally into the cylindrical portion 57 is positioned inwardly of the end 50 of the valve casing to provide communication with the interior of the container, said port intersecting an axial bore 59 extending from a closed end 60 outwardly to the outer end of the shank to provide a discharge passage for the contents of the container. In the structure illustrated, a head 61 is mounted on the outer end of the

shank and provided with a laterally directed spout 62 having a bore 63 communicating with the bore 59 whereby the contents of the container may be discharged through the nozzle. It is preferred that the head be spaced from the collar 55 whereby the end surface 64 of the head will engage the end 51 of the valve casing when the valve member is in open position as illustrated in FIG. 4. When the valve member is moved outwardly relative to the container to engage the shoulder 56 with the shoulder 53, the port 58 is moved into the valve casing to register with the counterbore 49 whereby the lower smooth end of the cylindrical portion 57 is positioned in the bore 50 and engaged therewith to form a seal to prevent leakage or discharge of the contents of the container through the valve assembly. When the parts are molded to provide the shapes described, the valve member is assembled in the valve casing by inserting the cylindrical end 57 into the bore 48 and pushing downwardly on the valve member to position the collar 55 in the counterbore 49. The valve assembly is then ready for operation.

In the form of the invention illustrated in FIGS. 6 and 7, the dispensing valve generally consists of a valve member 65 and a valve casing 66 and, in the illustrated structure, said valve casing is integral with the walls 67 of the container having a chamber 68 therein. In this form of the invention, the structure is similar to that illustrated and described in FIGS. 1 to 3 inclusive, with the additional provision of shoulders or lugs 69 on the vanes or ribs 70 that extend inwardly into the chamber 68 whereby said lugs engage the inner end 71 of the valve casing to limit outward movement of the valve member 65 relative to said casing. The end 72 of the head 73 is adapted to be moved tightly into engagement with the end surface 74 of the valve casing to form a seal therewith when the valve member is moved to closed position, as illustrated in FIG. 6. This also provides a stop to limit inward movement of the valve member relative to the valve casing. In the closed position, the cylindrical portion 75 of the shank is positioned in the bore 76 at the inner end of the valve casing toward the chamber 68 and has a resilient engagement therebetween to form a seal. The port 77 extending laterally in the shank is above the bore 76 to provide communication between the counterbore 78 in the valve casing and a discharge bore 79 extending from a closed end 80 outwardly through the end of the head to provide a discharge passage or channel when the valve member is moved to open position, as illustrated in FIG. 7, wherein fluid can flow from the chamber 68 between the ribs 70 through the bore 76, counterbore 78, port 77 and bore 79. Movement of the valve member 65 relative to the casing 66 is positively effected by screw threads, the shank 81 of the valve member having external screw threads 82 threadedly engaged with internal screw threads or grooves 83 in the counterbore 78. In the illustrated structure, the helical means or screw threads 82 and 83 are of double lead type whereby full movement of the valve member from open to closed position will be effected by relatively few turns. Also, the screw threads and grooves preferably have a resilient engagement to form a relatively tight sealing contact to prevent leakage, but said sealing contact is of a light interference type whereby the parts may be moved with ease while maintaining the seal. While this engagement contributes to the seal when the valve member is in closed position, the engagement between the cylindrical shank portion 75 and the bore 76 provides a positive seal when the valve is in closed position.

In the form of the invention illustrated in FIGS. 8 and 9, the dispensing valve 85 includes a valve member 86 and a valve casing 87 at one end of a container 88. The connection of the casing 87 to the container 88 may be in any suitable manner; however, in the illustrated structure, the casing is a part of a cap 89 secured to the container 88 in sealing relation thereto substantially in the same manner as the cap member 40 is secured to the container 33 in the form of the invention illustrated in FIG. 4, whereby the inner end of a passage 90 in the valve casing is in communication with the chamber 91 in the container. Also, the particular structure of the valve casing 87 and the passage therethrough are substantially the same as the valve casing 66 in the form of the invention illustrated in FIGS. 6 and 7. The valve member 86 has threads 92 that engage in internal threads or grooves 93 whereby rotation of the valve member 86 moves same longitudinally relative to the valve casing. The valve member 86 also has a head 94 and a longitudinal bore or passage 95 opening from the outer end 96 and extending inwardly and terminating in a closed end 97. The bore 95 has communication through a port 98 with the passage or bore 90 in the valve casing, said port being located in a reduced diameter portion 99 of the valve shank which extends from the threaded portion of the shank. The reduced portion 99 is preferably approximately the same size as the cylindrical sealing portion 100 and adapted to be positioned in the cylindrical bore 101 at the lower or inner end of the valve casing when the valve is in closed position. In this structure, the valve is in closed position when the valve member is moved outwardly relative to the valve casing, as illustrated in FIG. 9, and to limit the outward movement a collar 102 at the inner end of the cylindrical portion 100 engages the inner end surface 103 of the valve casing. It is preferable that the inner end of the valve member below the collar be of reduced area, and in the illustrated structure, it converges inwardly forming a substantially frusto-conical end 104. When the valve member is moved to open position, as illustrated in FIG. 8, the cylindrical portion 100 is moved inwardly into the chamber 91 with the upper or outer portion of said cylindrical part spaced below the end 103. In such open position, communication from the chamber 91 to the passage 90 is provided by channels or passages 105, said channels being formed by cutting away the valve shank to form spaced ribs 106 that extend from the reduced portion 99 to the cylindrical portion 100 of the valve member. In this structure, the collar 102 engaging the end 103 of the valve casing and the resilient engagement between the casing at the bore 101 and the cylindrical portion 100 of the valve member provides a positive resilient seal engagement to prevent leakage of the contents of the container chamber 91. When the valve is moved to open position, there is positive engagement between the end 107 of the head 94 and the outer end 108 of the valve casing and also a snug fit between the threaded shank and threaded bore or passage 90 to provide a seal whereby flow of the contents of the container through the channels 105 to the passage 90 moves through the port 98 and bore 95 in dispensing operations. In this closure structure, the valve parts may be molded of synthetic resin and all surfaces formed in the molding process, and the assembly of the parts is by merely inserting the valve member into the passage 90 and moving the inner end of the valve member therethrough with the resiliency of the material permitting the collar 102 to pass through the bore 100 to the position shown in FIG. 9 and thereafter said shoulder forms a stop to resist separation.

In the form of the invention illustrated in FIGS. 10 to 14 inclusive, the dispensing valve 110 includes a valve member 111 which cooperates with a valve casing 112 that is secured on a container 113 having a chamber 114 therein. In the structure illustrated, the valve casing 112 is integral with an end member 115 of the container which, in the particular structure shown, is removably secured to a neck 116 of the container by a threaded connection and seals that are substantially the same structure for securing the member 40 on the container 33 in the structure illustrated in FIG. 4. The valve casing 112 has a longitudinal bore 117 adjacent its inner end 118

and a counterbore **119** extends from a shoulder **120** toward the outer end **121** where is opens as at **122**. The counterbore is preferably tapered or converging toward the outer end or opening **122** whereby said opening is of reduced cross section for a sealing action as later described. The inner end **118** of the valve casing is preferably provided with flow openings or channels **123** extending radially therethrough for facilitating flow of the contents of the container chamber **114** through the valve assembly, as later described. The valve member **111** has a cylindrical portion **124** with a ribbed area **125** extending therefrom and terminating in a collar **126** and conical end **127** that is similar in structure to the inner end portion of the valve member **65** illustrated in FIGS. 6 and 7 with the exception that the collar and end **127** are made solid, whereby said collar **126** is adapted to engage the end **118** of the valve casing to form a stop to prevent or resist removal of the valve member from the valve casing.

The valve member **111** has a shank portion **128** extending from the outer end of the cylindrical portion **124**, said shank terminating in a head **129** having an end **130** adapted to engage the end **121** of the valve casing to form a limit of inward movement when the valve member is in valve closing position, as illustrated in FIG. 10, wherein the cylindrical portion **124** is positioned in the bore **117** and is resiliently engaged to form a seal, said seal portion being inwardly of a port **131** that extends laterally inwardly in the cylindrical portion to communicate with a bore **132** that extends from a closed end **133** to an opening **134** at the outer end of the head **129**. The shank portion **128** has a plurality of spaced circumferential ribs **135** adjacent the port **131** with the outer or peripheral edges of the ribs being adapted to engage the surface of the counterbore **119** in the inner portion thereof as when the valve member is in closed position, as illustrated in FIG. 10, at which position the outer end portion **121** of the valve casing, due to the tapered counterbore, engages the shank portion **128** which preferably is cylindrical to have a resilient lip engagement providing an interference seal at the outer end of the counterbore, FIG. 14.

When the valve member is moved to open position, the collar **126** engages the end **118** of the valve casing and the contents will flow through the openings **123** in the ribbed area **125** and to the counterbore **119** through the port **131** and out of the opening **134**. In this position, the valve member is moved to the position illustrated in FIG. 11 wherein the ribs **135** engage the tapered portion of the counterbore to form further interference resilient type seals to prevent any escape of contents through the valve casing whereby all of the contents must pass through the port **131** and out the bore and opening **134**. This structure provides a positive seal in all positions of the valve assembly, and all parts may be easily molded whereby the structure can be economically manufactured and assembled.

It is to be understood that while I have illustrated and described certain forms of my invention, it is not to be limited to the specific forms or arrangements of the parts herein described and shown except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. A dispensing valve structure for containers comprising, an elongate valve casing adapted to be positioned with one end in communication with a chamber adapted to contain flowable materials, said valve casing having a through passage extending longitudinally thereof, said valve casing having a portion adjacent said one end defining a cylindrical opening forming a portion of said passage, said passage having an enlarged portion extending from said cylindrical opening toward the other end of said valve casing, said valve casing at said other end extending inwardly relative to said passage to provide a reduced area thereof, an elongate valve member having a shank extending through said passage, said valve member having a bore opening exteriorly of said valve casing and extending longitudinally through the shank and terminating in a closed end spaced from the opposite end of the shank, a port in said shank below the upper end of the valve casing and opening into said bore, said shank having a reduced portion adjacent said opposite end with a cylindrical portion between the port and said opposite end being of a size to engage in the cylindrical portion of the passage and form a resilient compression seal with the valve casing, stop means on the valve member and valve casing below the upper end of the valve casing and adapted to be engaged in response to relative longitudinal movement thereof to limit said movement, said port in the valve member communicating with the enlarged portion of the passage, and flow channel portions on the valve member providing communication between the chamber and said enlarged portion of the passage when said flow channel portions are positioned in the cylindrical portion of the valve casing passage for dispensing of flowable materials through the valve member.

2. A dispensing valve structure for containers comprising, an elongate valve casing adapted to be positioned with one end in communication with a chamber adapted to contain flowable materials, said valve casing having a through passage extending longitudinally thereof, said valve casing having a portion adjacent said one end defining a cylindrical opening forming a portion of said passage, said passage having an enlarged portion extending from said cylindrical opening toward the other end of said valve casing, said valve casing at said other end extending inwardly relative to said passage to provide a reduced area thereof, an elongate valve member having a shank extending through said passage, a head on said valve member exteriorly of and adjacent said other end of the valve casing, said valve member having a bore opening from said head and extending longitudinally through the shank and terminating in a closed end spaced from the end of the shank opposite from the head, a port in said shank below the upper end of the valve casing and opening into said bore, said shank having a reduced portion adjacent the end opposite from the head with a cylindrical portion between the port and said opposite end being of a size to engage in the cylindrical portion of the passage and form a resilient compression seal with the body or valve casing, stop means on the valve member and the valve casing below the upper end of said valve casing and adapted to be engaged in response to relative longitudinal movement thereof to limit said movement, said port in the valve member communicating with the enlarged portion of the passage, flow channel portions on the valve member providing communication between the chamber and said enlarged portion of the passage when said flow channel portions are positioned in the cylindrical portion of the valve casing passage for dispensing of flowable materials through the valve member, and means adjacent the other end portion of the valve casing having engagement with the shank to provide a compression seal therewith.

3. A dispensing valve structure for containers comprising, an elongate valve casing adapted to be positioned with one end in communication with a chamber adapted to contain materials to be dispensed, said valve casing having a through passage extending longitudinally thereof, said valve casing having a portion adjacent said one end defining a cylindrical opening forming a portion of said passage, said passage having an enlarged portion extending from said cylindrical opening toward the other end of said valve casing, said valve casing at said other end extending inwardly relative to said passage to provide a reduced area thereof, an elongate valve member having a shank extending through said passage, a head on said valve member exteriorly of and adjacent said other end of the valve casing, said valve member having a bore opening from said head and extending longitudinally through the shank and terminating in a closed end spaced from

the end of the shank opposite from the head, a port in said shank below the upper end of the valve casing and opening into said bore, said shank having a reduced portion adjacent the end opposite from the head with a cylindrical portion between the port and said opposite end being of a size to engage in the cylindrical portion of the passage and form a resilient compression seal with the body or valve casing, stop means on the valve member and valve casing below the upper end of said valve casing and adapted to be engaged in response to relative longitudinal movement thereof to limit said movement, said port in the valve member communicating with the enlarged portion of the passage, flow channel portions on the valve member providing communication between the chamber and said enlarged portion of the passage when said flow channel portions are positioned in the cylindrical portion of the valve casing passage for dispensing flowable materials through the valve member, and helical means on said valve member shank and valve casing operative to effect longitudinal movement of the valve member in response to relative rotation of said valve member and valve casing.

4. The combustion of a container and a sealing and dispensing closure comprising, a hollow body defining a container and having an integral elongate valve casing thereon, said valve casing having a through passage with an inner end communicating with the interior of the hollow body, said valve casing having an integral resilient wall defining a reduced cylindrical section of said passage adjacent said inner end, a valve member having a shank extending through said passage and movable as a whole in one direction to an open flow position and in the other direction to a closed position, spaced stop means on each of the shank and said valve casing with one on each being outside said valve casing and the other of each located below the upper end of the valve casing, said stop means being engageable in response to movement of the valve member to open and closed postions for limiting movement of said valve member in the respective directions in the valve casing, said valve member shank having a lateral opening located below the upper end of the valve casing, said shank having a closed end below the lateral opening and a bore with which said lateral opening communicates extending from said closed end of the shank outwardly through the shank to a discharge opening that is exteriorly of said valve casing, said lateral opening in the valve member being between the stop means thereon and the inner end of the valve casing, said valve casing passage and valve member having cooperating portions which with the lateral opening and bore form a channel for dispensing contents of the hollow body through said discharge opening when the valve member is in open position, and a cylindrical portion on said shank sealingly engaging the resilient wall defining the reduced cylindrical portion of the passage and closing said channel when the valve member is in closed position.

5. A closure means for containers comprising, a valve casing molded of resilient synthetic resin with a through passage with an inner end adapted for communication with a container and an outer end, said valve casing having a wall defining a section of said passage of reduced transverse area adjacent said inner end thereof, a one-piece valve member having a shank extending into said outer end of said passage and through said passage with said valve member being movable as a whole, a radially outwardly extending stop means on the shank below the upper outer end of the valve casing and engageable with said valve casing in one position of the valve member for limiting movement of the valve member from the valve casing, said valve member shank having a port located below the stop means thereon communicating with the valve casing passage outwardly of the section of reduced transverse area, said shank having a closed end below the port and a bore with which said port comunicates extending from said closed end outwardly through the shank and opening exteriorly of the valve casing, said port in the valve member being between the radially outwardly extending stop means on the valve member and the inner end of the valve casing, said valve casing passage and valve member having cooperating portions which with said port and bore form a dispensing channel extending from said container to the exterior of the valve casing when the valve member is in open postion, and a portion on said shank in the reduced portion of the passage and being of a size and shape for resilient sealing engagement with said wall and closing said channel when the valve member is in closed position.

6. The combination of a container and a sealing and dispensing closure comprising, a hollow body having an elongate valve casing of flexible material, said valve casing having a through passage with an inner end communicating with the interior of the hollow body and an outer end exteriorly thereof, said valve casing having a wall portion defining a reduced section of said passage adjacent said inner end, a one-piece valve member having a shank extending into said outer end of said passage and through said passage and movable as a whole therein, a head on one end of said shank, a radially outwardly extending stop means integral with the shank and located below the upper end of the valve casing and engageable with said valve casing in one position of the valve member for limiting movement of the valve member from the valve casing in the direction of the head, said valve member shank having a lateral opening located below the stop means thereon, said shank having a closed end below the lateral opening and a bore extending therefrom through the shank to a discharge opening exteriorly of said valve casing, said lateral opening in the valve member being between the radially outwardly extending stop means on the valve member and the inner end of the valve casing, said valve casing passage and valve member having cooperating portions which with said lateral opening and bore form a channel for dispensing contents of the hollow body through said discharge opening when the valve member is in open position, and a portion on said shank having resilient sealing engagement with the wall portion defining the reduced portion of the passage and closing said channel when the valve member is in closed position.

7. The combination of a container and a sealing and dispensing closure comprising, a hollow container body having an integral elongate valve casing thereon, said valve casing having a through passage with an inner end communicating with the interior of the hollow body and an outer end exteriorly thereof, said valve casing having a wall defining a reduced cylindrical section of said passage adjacent said inner end, a one-piece valve member having a shank extending into said outer end of said passage and through said passage and movable as a whole therein, a head on one end of said shank and adapted to engage the outer end of the valve casing in one position of said valve member, a radially outwardly extending stop means on the shank below the upper end of the valve casing and engaging with said valve casing in another position of the valve member for limiting movement of the valve member from the valve casing in the direction of the head, said valve member shank having a lateral opening located below the stop means thereon, said shank having a closed end below the lateral opening and a bore extending therefrom through said shank and head to a discharge opening, said lateral opening in the valve member being between the radially outwardly extending stop means on the valve member and the inner end of the valve casing, said valve casing passage and valve member having cooperating portions which with said lateral opening and bore form a channel for dispensing contents of the hollow body through said discharge opening when the valve member is in open position, and a cylindrical portion on said shank having resili-

ent sealing engagement with the reduced cylindrical portion of the passage and closing said channel when the valve member is in closed position.

8. The combination of a container and a sealing and dispensing closure comprising, a hollow body defining a flowable material containing chamber, an elongate valve casing integral with said body and extending outwardly of said chamber, said valve casing having a through passage longitudinally therein with an inner end communicating with said chamber and an outer end exteriorly thereof, said passage having an enlarged portion spaced from the ends thereof and a reduced portion between the enlarged portion and the chamber, a one-piece valve member extending through said passage and movable as a whole therein to chamber opening and closing positions, said valve member having a dispensing passage therein open at one end thereof exteriorly of the elongate valve casing and having a lateral port spaced from the other end of the valve member and communicating with the chamber in open position of the valve member, a collar on said valve member between the communicating port and the valve member and the outer end of said valve casing, said collar and valve casing having cooperating shoulder means below the outer end of said valve casing and engageable in one position of the valve member for limiting movement of the valve member in one direction in the valve casing, said lateral port being between the collar and the inner end of the valve casing and within said valve casing when the collar shoulder means is engaging the shoulder means of the valve casing, and a portion of the valve member between said other end thereof and said port sealingly engaging the reduced portion of the passage when the valve member is in closed position, one of said valve casing and valve member being of resilient material to form a pressure-tight sealing engagement in the latter reduced portion thereof.

9. The combination of a container and sealing and dispensing closure comprising, a hollow body defining a chamber for containing material to be dispensed, an elongate valve casing on said body and extending outwardly of said chamber, said valve casing having a through passage longitudinally therein with an inner end communicating with said chamber and an outer end exteriorly thereof, said passage having an enlarged portion spaced from the ends thereof and a reduced cylindrical portion between the enlarged portion and the chamber, the valve member extending through said passage and movable as a whole therein to chamber opening and closing positions, said valve member having a dispensing passage therein open at one end thereof exteriorly of the elongate valve casing and having an opening communicating with the chamber in open position of the valve member, said valve member having a collar thereon between the communicating opening of the valve member and the outer end of said valve casing, said collar sealingly engaging the valve casing in the enlarged portion of the passage therein outwardly relative to said communicating opening of the valve member, said collar and valve casing having cooperating shoulder means below the outer end of the valve casing and engageable in one position of the valve member for limiting movement of said valve member in one direction in the valve casing, said communicating opening in the valve member being between the collar and the inner end of the valve casing and within said valve casing when the collar shoulder is engaging the collar in the valve casing, and a cylindrical portion on the valve member sealingly engaging in the cylindrical portion of the passage when the valve member is in closed position, said valve casing and valve member being of resilient material to form a pressure-tight sealing engagement in the cylindrical portions thereof.

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