United States Patent [19]

Anderson, Jr.

[11] **3,923,203**

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[54] **TAP FOR AN HERMETICALLY SEALED CONTAINER**

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[21] Appl. No.: **479,355**

[52] **U.S. Cl.** **222/153;** 137/588; 222/484; 222/548

[51] **Int. Cl.²** **B67D 5/02**

[58] **Field of Search** 137/212, 588; 222/400.7, 222/153, 484, 481, 548

[56] **References Cited**

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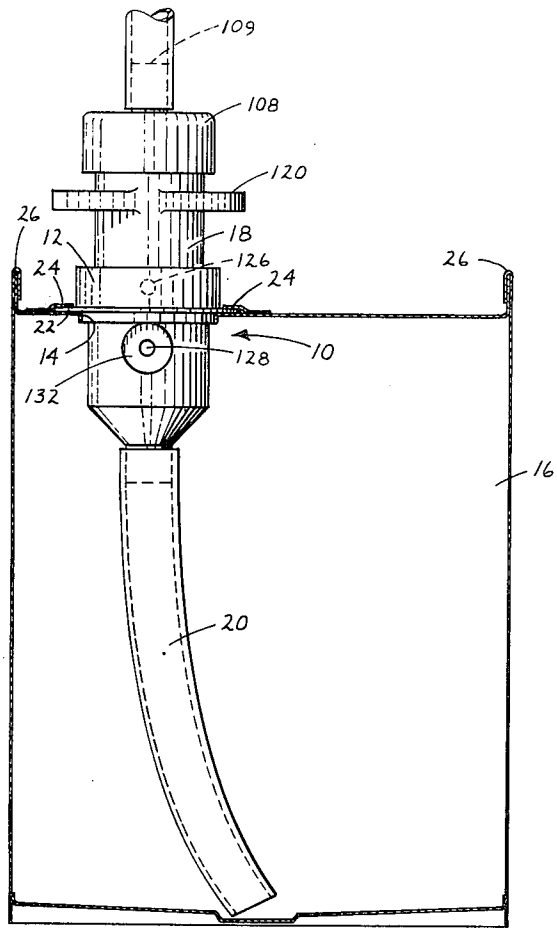
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Primary Examiner—Robert B. Reeves
Assistant Examiner—David A. Scherbel
Attorney, Agent, or Firm—Huebner & Worrel

[57] **ABSTRACT**

A tap adapted to be seated in the discharge orifice of an hermetically sealed container and function in a first mode for hermetically sealing the orifice and in a second mode for facilitating a safe discharge of liquid contents from the container. The tap is characterized by a valve body, including a fluid passageway; a fluid delivery body, adapted to be coupled to the valve body, including a fluid passageway; and valving means disposed within the valve body and connected with the fluid delivery body responsive to coupling motion for establishing communication between the passageways of said valve body and said fluid delivery body.

18 Claims, 13 Drawing Figures



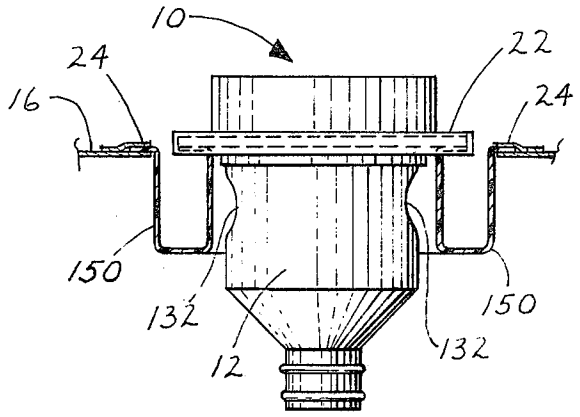

10
24
22
16
24
150
132
12
132
150

Fig. 13

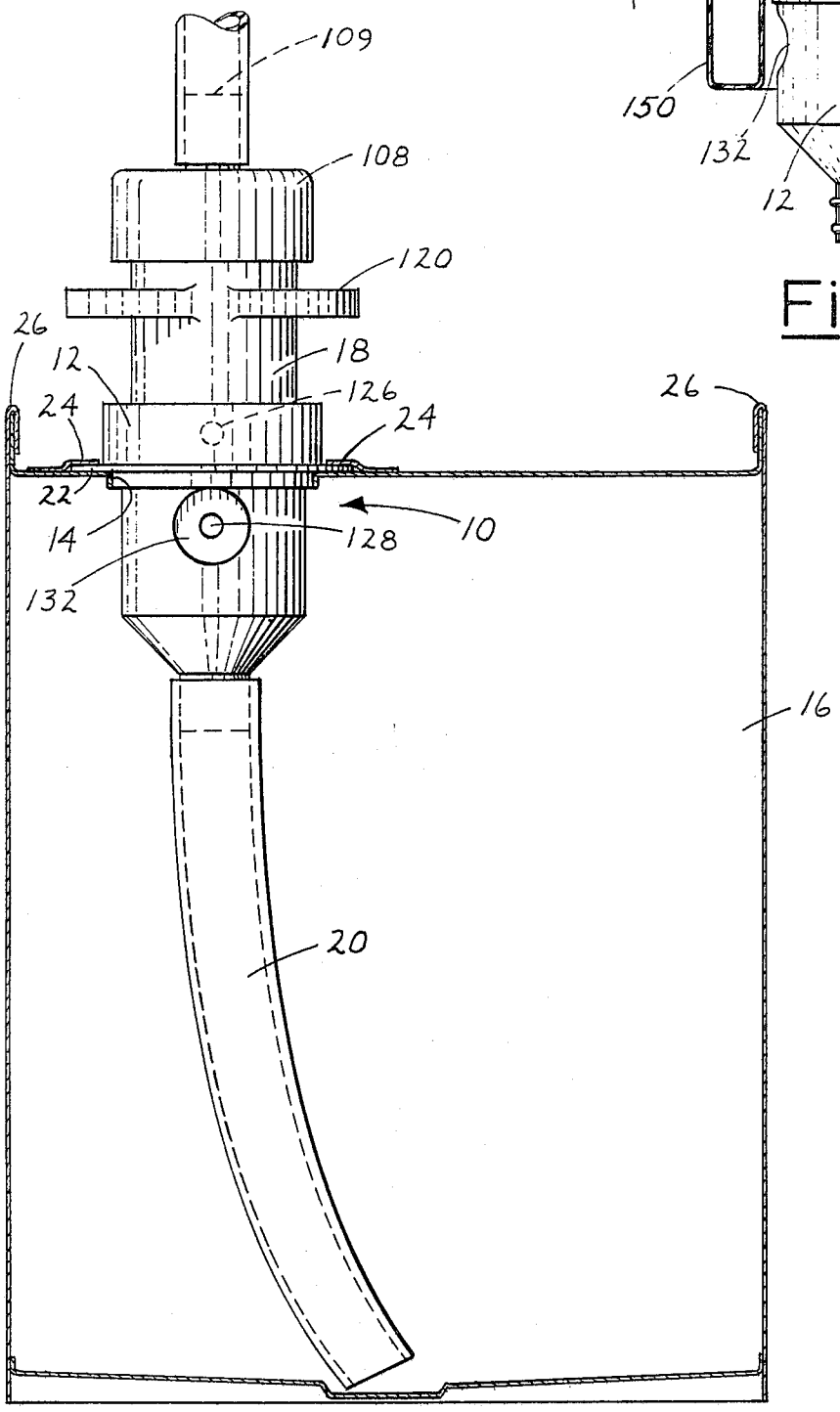

109
108
120
26
12
18
126
24
24
26
22
14
128
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132
16
20

Fig. 1

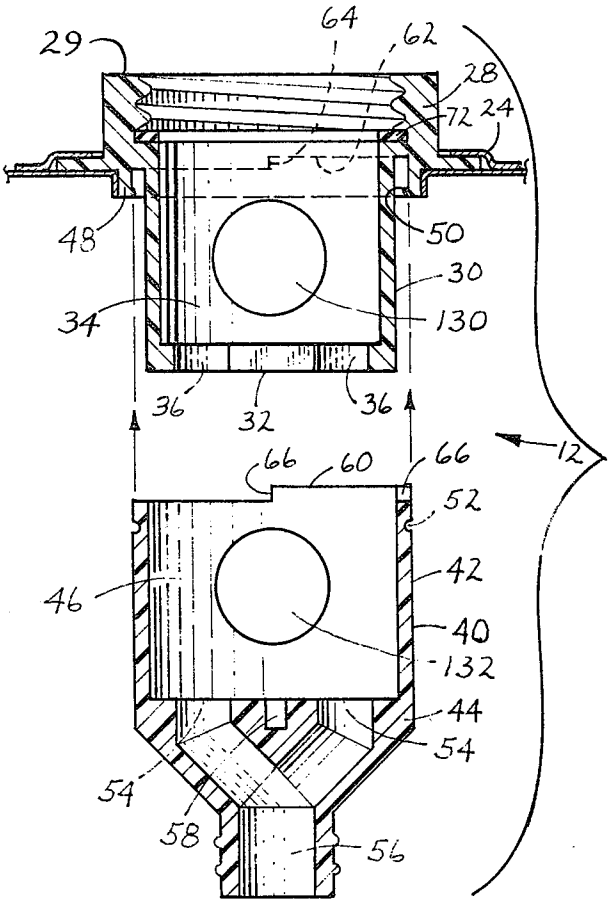


Fig. 2

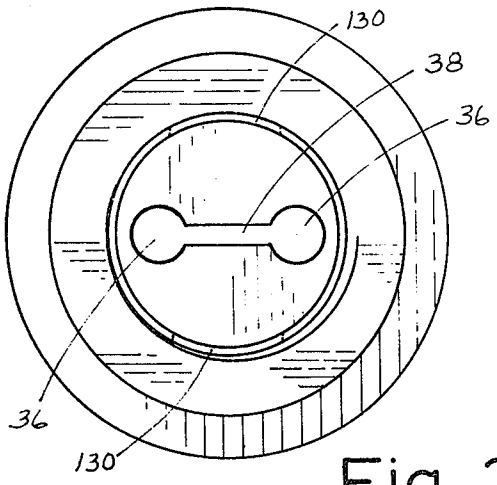


Fig. 3

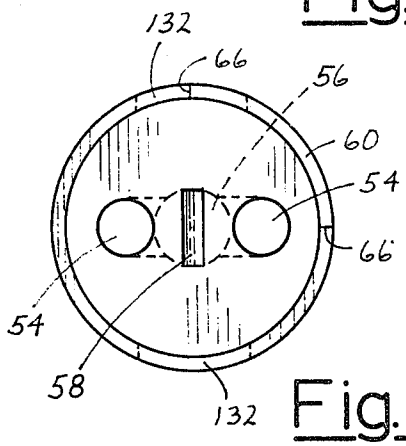


Fig. 4

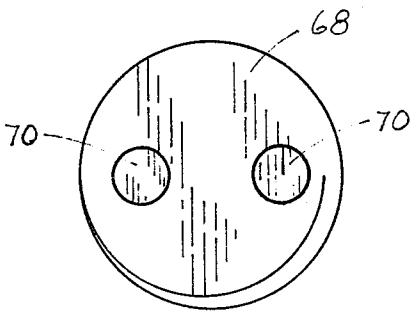


Fig. 5



Fig. 6

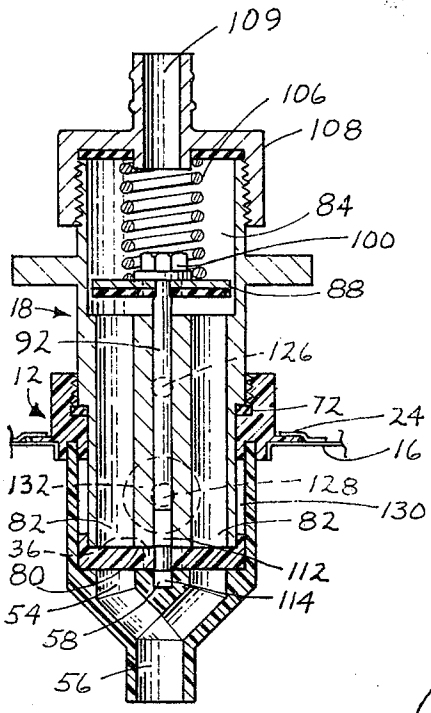
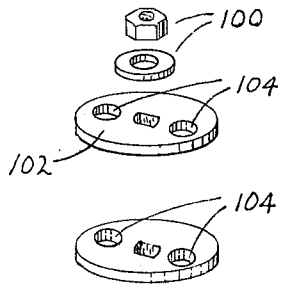


Fig. 7



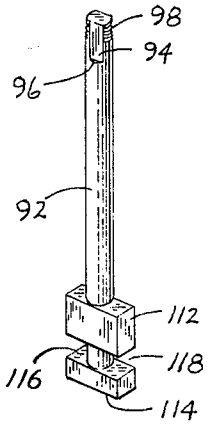


Fig. 8

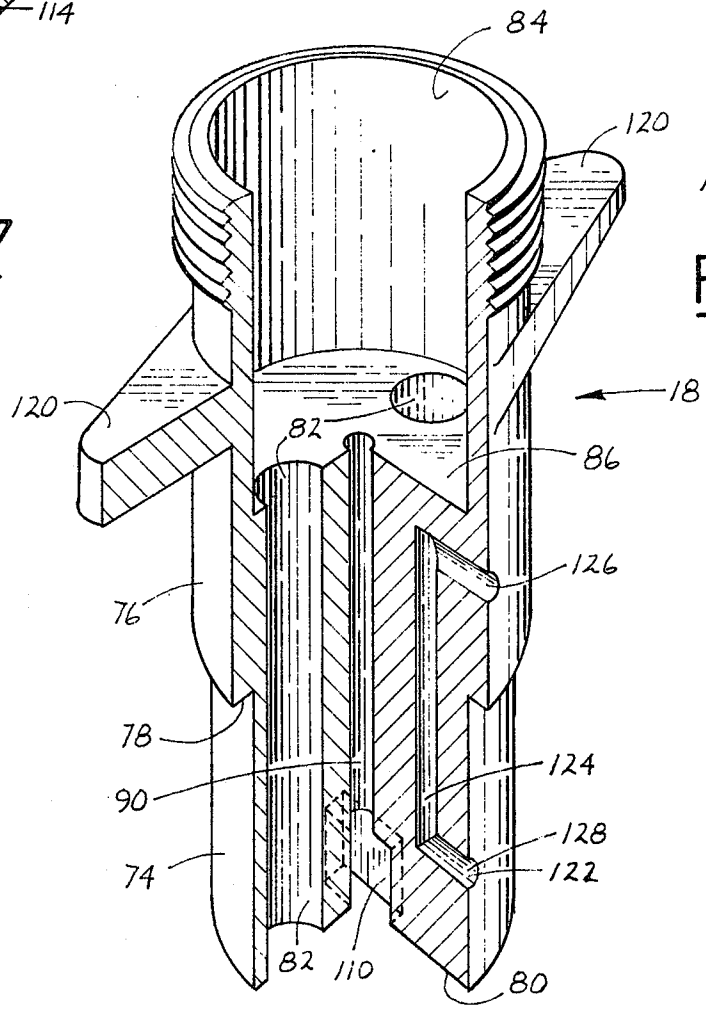


Fig. 9

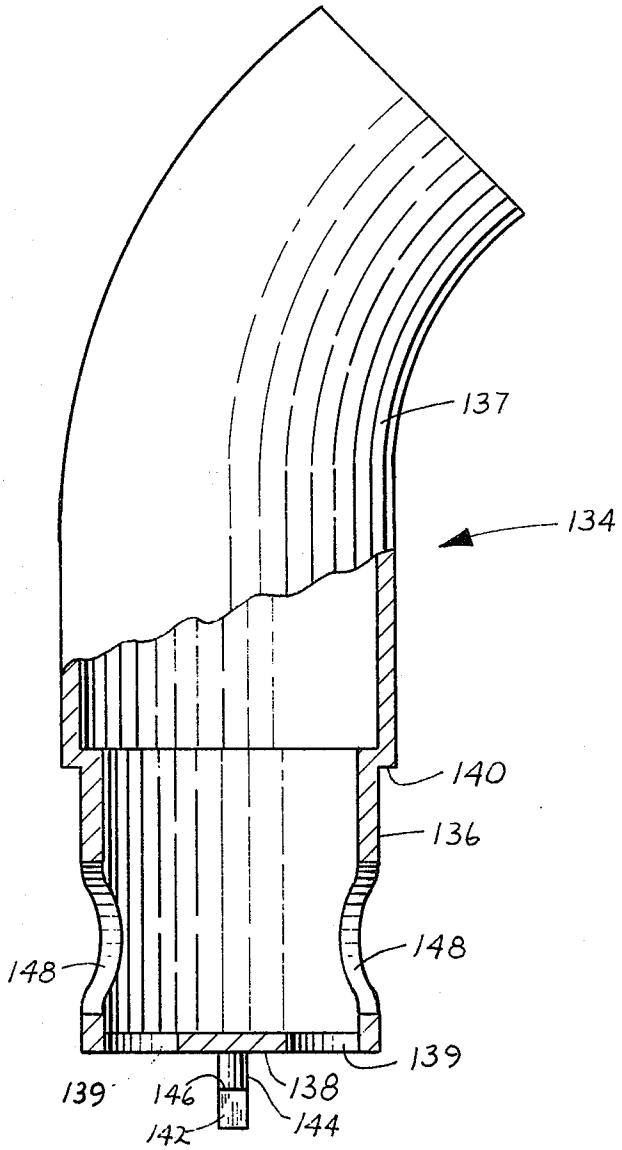


Fig. 10

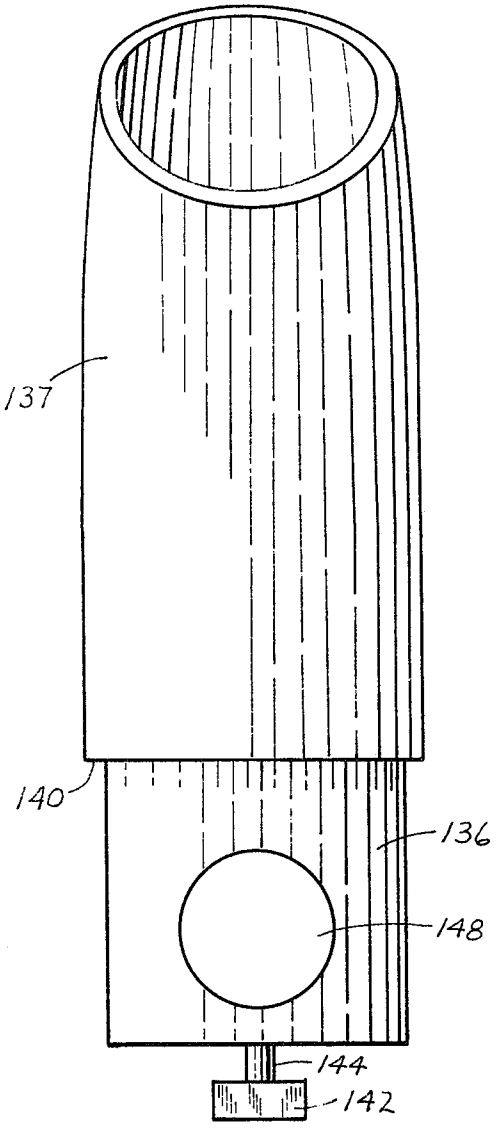


Fig. 11

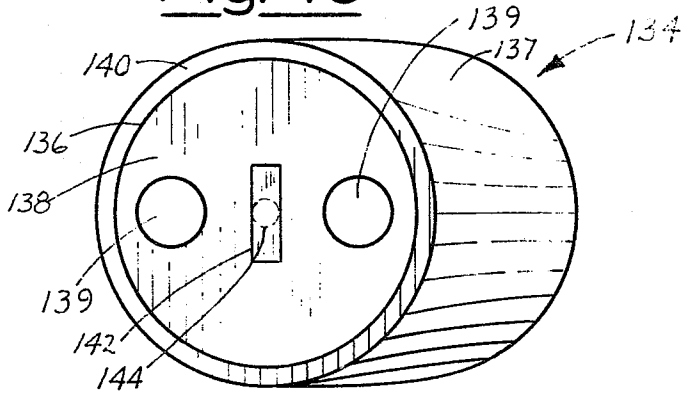


Fig. 12

TAP FOR AN HERMETICALLY SEALED CONTAINER

BACKGROUND OF THE INVENTION

The invention generally relates to devices used to open and close the discharge orifice of sealed containers, and more particularly to a tap adapted to be seated in the discharge orifice of an hermetically sealed container and function in a first mode for hermetically sealing the orifice and in a second mode for facilitating the discharge of contents in liquid form from the container.

In the field of agriculture, large acreages must be treated with suitably diluted toxic chemicals for effectively destroying unwanted plants, insects, and the like. It is, of course, impractical to transport large quantities of diluted toxic chemicals in liquid form to or near a situs of use. Therefore, it is common practice to transport toxic chemicals in concentrated liquid form to a situs of use and thereafter dilute the chemical to suitable strength employing water there made available.

Mixing of the toxic liquids normally is achieved in a mixing tank through which water is repetitiously recirculated. In order to fill the tank, a sealed container is opened at its discharge orifice and contents thereof manually discharged into the mixing tank through a pouring operation.

As can readily be appreciated by those familiar with the use of toxic chemicals employed in agricultural endeavors, contamination due to spillage of chemicals in concentrated liquid form on the clothing and skin as well as inhalation of the chemicals in a gaseous state inflict serious damage to the body and health of the person associated with the mixing operation, herein also referred to as a handler.

As more specifically described in U.S. application Ser. No. **430,072,** filed Jan. **2, 1974,** it is possible to protect those engaged in mixing operations through the use of a closed, fluid measuring circuit for introducing the chemical into the mixing tank. Such a circuit includes a holding tank for receiving a body of toxic chemicals in liquid form, namely, a selectively vacuumized holding tank, and a flexible tubular conduit having one end connected in communication with the holding tank while the opposite end of the conduit is adapted to be extended through a substantially sealed opening provided in an hermetically sealed container, confining therein a body of toxic chemicals in liquid form. The low pressure of the holding tank is then applied to the container for discharging the contents. However, there currently exists a need for a substantially leak-proof tap for use in coupling such conduits with such container, and, alternatively, adapted to be employed in manually performed pouring operations.

It is the general purpose of the instant invention to provide a bi-modal tap particularly adapted to be seated in the discharge orifice of a container, such as a point of sale container, for hermetically sealing the orifice, whereby the container can be transferred from a point of a sale to a situs of use without subjecting handlers to contamination through leakage, and thereafter employed in the discharge of contents from the container, through either an application of a vacuum or, alternatively, through a pouring operation.

OBJECTS AND SUMMARY OF THE INVENTION

It is therefore an object of the instant invention to provide a tap adapted to be seated in the discharge orifice of an hermetically sealed container for liquid materials.

It is another object to provide a bi-modal tap adapted to be received in the discharge orifice of an hermetically sealed container and function in a first mode for hermetically sealing the orifice and in a second mode for facilitating the discharge of liquid contents from the container.

Another object is to provide an improved tap including a valve body adapted to be hermetically sealed within the discharge orifice of a container for toxic liquids, and a fluid discharge body adapted to be inserted into the valve body.

Another object is to provide a tap having a valve body, including valving means, adapted to be suspended within the discharge orifice of a container and a fluid delivery body adapted to be inserted into the valve body and coupled with the valving means for opening the valving means.

Another object is to provide a bi-modal tap for the discharge opening of a container, including a valve body and a fluid delivery body, said valve body being provided with valve means, including a specifically configured key well, adapted to be actuated for opening the tap in response to manipulation of a specifically configured key projected from said fluid delivery body and inserted into said key well for locking together said bodies, whereby extraction of contents from the container by persons other than those in possession of said fluid delivery body is prevented.

It is another object to provide a tap including a valve body adapted to be received within the discharge orifice of a container for chemicals in fluid states including a passageway, a valve gate associated with the passageway and a pouring spout adapted to be received by the valve body and connected with the valve gate for opening the valve gate relative to the passageway as a coupling between the pouring spout and the valve body is effected for accommodating a manual pouring operation, and a fluid delivery body connected with a conduit extended from a measuring circuit for siphoning the liquid contents from the container and adapted to be received by the valve body interchangeably with the pouring spout.

These and other objects and advantages are achieved through a tap having a valve body including means defining therein a fluid passageway extended through the valve body, a valve gate displaceable between a valve-open and a valve-close position relative to said first passageway, adapted to be suspended within the discharge orifice of an hermetically sealed container and affixed thereto. A fluid delivery body having means defined therein a second passageway extended through the fluid delivery body into communication with said first fluid passageway when said valve gate is in its open position and coupling means for connecting the fluid delivery body with the valve gate for selectively opening the valve gate as the fluid delivery body is connected with the valve body. The valve body is adapted to receive, alternatively, the fluid delivery body, through which the valve body is connected with a remote source of a vacuum, or a valve body having a pouring spout provided for facilitating manual pouring operations, as will become more readily apparent by reference to the following description and claims in light of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmented, partially sectioned view depicting a tap having a valve body and a fluid delivery body and a ported block suspended in a discharge orifice of an hermetically sealed container adapted to confine chemical materials in a liquid state.

FIG. 2 is an exploded, cross-sectional view of a valve body provided for the tap shown in FIG. 1, including a receiver and a ported block adapted to serve as a valve gate.

FIG. 3 is a top plan view of the receiver shown in FIG. 2.

FIG. 4 is a top plan view of a ported block shown in FIG. 2.

FIG. 5 is a top plan view of a closure disk adapted to be inserted into the receiver shown in FIG. 2.

FIG. 6 is a side elevation of the closure disk shown in FIG. 5.

FIG. 7 is a cross-sectional view of the tap shown in FIG. 1, depicting the valve in an operational but valve-close position wherein a spring-loaded closure plate is positioned for interrupting a flow of fluid through the fluid delivery body, and a key is projected from the fluid delivery body into the ported block preparatory to coupling the valve body and fluid delivery body.

FIG. 8 is an exploded, perspective view of the key shown in FIG. 7, having a closure plate affixed to one end thereof for precluding a back-flow of fluid therethrough.

FIG. 9 is a partially sectioned view of the fluid delivery body shown in FIG. 7, with the key and closure plate of FIG. 8 removed therefrom.

FIG. 10 is a partially sectioned view of a fluid delivery body adapted to be connected with the valve body and employed in manually performed pouring operations.

FIG. 11 is a side elevation of the fluid delivery body shown in FIG. 10, rotated through 90° with respect thereto.

FIG. 12 is a bottom plan view of the fluid delivery body shown in FIGS. 10 and 11.

FIG. 13 is a modified embodiment of the valve body.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now with more specificity to the drawings wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in FIG. 1 a tap, generally designated 10, which embodies the principles of the instant invention.

As shown in FIG. 1, the tap 10 includes a valve body 12 seated within a discharge orifice 14 of an hermetically sealed container 16. While the container 16 forms no specific part of the instant invention, it is to be understood that the container is suitably configured for receiving and confining toxic chemicals in fluid states. Within the valve body 12, as shown, there is seated a fluid delivery body 18. A siphon tube 20 is affixed to the valve body 12 and extends downwardly into a well, not designated, provided in the bottom of the container 16.

It is to be understood that the tap 10 can readily be employed with containers which differ in shape and/or in size from the container 16. Moreover, while the tap 10 is particularly useful in handling toxic chemicals, it should readily be appreciated that the tap 10 can be employed in the handling of non-toxic chemicals equally as well. As also shown, the valve body 12 is provided with an annular collar 22 received beneath an annular lip 24 whereby the valve body is secured in place within the discharge orifice 14. Additionally, it is to be understood that the container 16 includes a protective chime 26 projected above the uppermost surfaces of the valve body 12 a distance sufficient to protect the valve body 12 from impact during handling operations.

Additionally, it is to be understood that the tap 10 is fabricated from suitable materials particularly adapted to withstand the undesired effects of the chemicals to be handled. Such materials include synthetic resins such as polyvinyl chloride, and metallic materials including stainless steel, and the like. Of course, the materials employed are in practice varied, as desired, provided the material employed is compatible with the chemicals to be handled.

The valve body 12 includes an internally threaded base 28 of a cylindrical configuration coaxially related to the annular collar 22. The base includes a helical thread, not designated, and an uppermost annular surface 29, the purpose of which will hereinafter become apparent. From the base 28, in coaxial alignment therewith, there is extended a sleeve 30, FIG. 2, having predetermined internal and external diameters. A closure plate 32, integrally related with the sleeve 30, extends transversely across the depending end portion of the sleeve 30, in spaced relation with the base 28. Thus, the sleeve 30 and closure plate 32 define within the valve body 12, a chamber 34 which, in practice, serves as a receiver, in a manner hereinafter more fully described.

The closure plate 32 includes a pair of axially projected ports 36 between which there is extended a diametrically oriented keyway 38, FIG. 3. These ports serve to accommodate a flow of fluid through the closure plate, as will hereinafter become more fully appreciated.

Mounted on the sleeve 30, in a telescopic relation therewith, there is a ported block 40. The ported block 40 includes a cylindrical sleeve 42 extended coaxially from an integrally related base 44 and configured to receive in telescopic relation the sleeve 30. Thus, the sleeve 42 and the base 44 collectively define a chamber 46 for receiving the sleeve 30. As a practical matter, the valve body 12 also includes an annular retainer lip 48 circumscribing the end of the sleeve 42 remote from the base 44. An inwardly directed rib 50, integrally related with the retainer lip 48, FIG. 2, is provided to be seated in an annular groove 52 which circumscribes the outer surface of the sleeve 42. Thus, the block 40 is supported by the lip 48 for angular displacement relative to the sleeve 30.

Within the base 44 there is provided a pair of diametrically spaced, similarly oriented bores 54 which terminate in an integrally related conduit 56 extended axially into the base 44 to thus form a bifurcated passage. Interposed between the bores 54 there is a key well 58 machined or otherwise formed in the base 44. It is particularly important to note that the bores 54 are so oriented so as to be brought into and displaced from registry with the ports 36 as angular displacement is imparted to the block 40. Moreover, the key well 58 is so configured and oriented as to be aligned with the keyway 38 when the bores 54 are angularly displaced 90° from registry with the ports 36 of the closure plate 32. Similarly, when the bores 54 are aligned in registry with

the ports **36** the key well **58** is reoriented to a position **90°** out of registry with the keyway **38.** Hence, it will be appreciated that the base **44** functions as a valve gate for establishing and interrupting communication between the ports **36** and the conduit **56.**

In order to achieve proper registry of the sleeve **42** relative to the sleeve **30,** a partial crown **60** is projected upwardly from the sleeve **42** and received within an arcuate relief **62** formed in coaxial alignment with the retainer lip **48.** As a practical matter, the relief **62** terminates in a pair of shoulders **64,** only one of which is shown, spaced **270°** apart, while the partial crown **60** terminates in a pair of shoulders **66,** only one of which is shown, spaced **90°** apart for alternately engaging the shoulders **64** when the sleeve **42** is oscillated.

In order to assure that an effective seal from exterior contamination of the valve body **12** when the tap **10** is not in use for discharging contents from the container **16** there is provided a closure disk **68,** having a peripherally oriented helical thread adapted to mate with the helical thread provided for the base **28.** A pair of blind reliefs **70** is provided in one surface of the closure disk **68** in order to facilitate an insertion and removal of the closure disk **68** with respect to the base **28.** As a practical matter, where it is found desirable to impede a tampering with the tap **10,** the reliefs **70** can be so configured as to require that a specifically configured tool be utilized for either removing or inserting the disk **68.**

In view of the foregoing, it should be apparent that when the valve body **12** is seated within the discharge orifice **14,** and the ported block **40** is rotated to a position such that the bores **54** are out of registry with the ports **36,** the ported block **40** functions as a valve gate for interrupting communication between ambient atmosphere and the contents of the container **16.** Additionally, once the closure disk **68** is seated within the base **28** of the valve body **12,** preferably against an annular gasket **72** seated on a suitably formed shoulder coaxially aligned with the chamber **34,** hermetic sealing of the discharge orifice **14** is assured.

As best illustrated in FIGS. **1** and **7,** the valve body **12** receives therein the fluid delivery body **18** in a coaxially aligned relationship. As a practical matter, the fluid delivery body **18** is of a substantially cylindrical configuration and includes a base segment **74** and an adjacently disposed distal segment **76.**

The outside diameter of the segment **74** is substantially equal to, but slightly less, than the internal diameter of the chamber **34,** while the outside diameter of the segment **76** is slightly greater. Thus the base segment **74** of the fluid delivery body **18** is configured to be inserted in telescopic relation into the chamber **34.** As a practical matter, the adjacent segments **74** and **76** of the fluid delivery body **18** are separated by an annular shoulder **78** adapted to seat against the uppermost surface of the gasket **72.** Thus the gasket **72** and the surface of the shoulder cooperate to form a seal therebetween, once the base segment **74** of the fluid delivery body is inserted axially into the chamber **34** of the valve body **12.**

It is important here to note that the axial dimension of the segment **74** is substantially equal to the distance between the uppermost annular surface of the gasket and the closure plate **32** so that a substantially fluid-tight seal is effected between a disk-shaped base surface, designated **80,** provided for the base end of the base segment **74** and the adjacent surface of the closure plate **32** when the fluid delivery body **18** is received within the chamber **34** of the valve body **12.**

Within the fluid delivery body **18** there is provided a pair of diametrically spaced bores **82** extended in parallelism from the base surface **80** of the base segment **74** to a chamber **84** provided internally of the distal segment **76** of the fluid delivery body **18.** As a practical matter, the bores **82** terminate in a common planar surface **86** provided in coaxially spaced relation with the surface **80.** The surface **86** defines a bottom surface for the chamber **84** and functions as a valve seat for a valve plate **88.** The plate **88** is of a circular configuration and is provided for sealing the bores **82** in a manner and for a purpose which will hereinafter be more readily understood.

Between the bores **82** there is provided in concentric relation with the fluid delivery body **18** a bore **90** provided for receiving an axially displaceable pin **92** having a base end and a distal end, not designated. The distal end portion of the pin **92** is provided with a pair of diametrically opposed flats **94** each of which terminates in a shoulder **96,** and an external screw thread **98** for receiving thereon a nut-and-washer combination **100.** The valve plate **88,** in turn, includes a disk **102** backed by a suitable gasket, not designated, provided for sealing the bores **82.** It is to be understood that once the valve plate **88** is connected with the pin **92** the gasket serves to seal the bores **82** as it is seated on the surface **86.**

In order to accommodate a flow of fluid from the bores **82** to the chamber **84,** when the valve plate **88** is in a displaced relationship with the surface **86,** the disk **102** and the gasket of the plate **88** are further provided with coaxially aligned pairs of diametrically spaced ports **104** disposed **90°** out of registry with the bores **82.** Consequently, fluid exiting the bores **82** is afforded passage through the valve plate **88,** via the ports **104,** into the chamber **84.**

In order to assure that the valve plate **88** is continuously urged into a valve sealing relationship with the bores **82,** a compression spring **106,** of a helical configuration, is seated in the chamber **84** in contiguous, coaxial alignment with the plate **88** and is in an abutted relation with an internally threaded cap **108.** This cap is threadedly received by the distal end of the fluid delivery body **18** and serves as a closure member for the chamber **84.** Consequently, the plate **88** is continuously urged by the spring **106** into a seated and sealing relationship with the surface **86** for thus sealing the bores **82** against a reverse passage of fluid from the chamber **84** to the bores **82.** As a practical matter, the cap **108** includes a coupling **109** through which the chamber **84** is connected in communication with a flexible conduit, not designated.

The base end portion of the fluid delivery body **18** is provided with a relief **110** so configured as to receive therein a boss **112** rigidly affixed to the base end portion of the pin **92.** The boss **112** is of an elongated configuration, and when seated in the relief **110** serves to assure that the pin **92** is fixed against angular motion relative to the fluid delivery body. Hence, the pin is angularly displaced about its longitudinal axis in response to angular displacement imparted to the fluid delivery body **18.**

Integrally related with the pin **92,** at the base end thereof, there is a transversely oriented, elongated key **114.** As best illustrated in FIG. **7,** the key **114** projects

beyond the base surface **80.** Moreover, the key **114** is so configured as to accommodate a reception thereof by the keyway **38** and the key well **58** as the fluid delivery body **18** is inserted axially into the chamber **34.**

It is important here to note that the key **114** is provided with a planar surface **116** disposed in spaced relation with the adjacent surface of the boss **112.** Consequently, between the boss **112** and the key **114** there is defined a space **118.** The dimension of the key **114,** in a direction paralleling the longitudinal axis of the pin **92,** is substantially equal to the depth of the key well **58** while the corresponding dimension of the space **118** is substantially equal to the thickness of the closure plate **32.** It will therefore be appreciated that rotation of the pin **92,** about its longitudinal axis, is accommodated by the space **118** for thus rotating the key **114** relative to the closure plate **32.**

Hence, it should be apparent that by imparting angular displacement to the fluid delivery body **18,** once the key **114** is extended through the keyway **38** and received within the key well **58,** angular displacement is imparted to the ported block **40.** This displacement of the block **40** serves to position the bores **54** into registry with the port **36.** Moreover, this displacement causes the key **114** to be rotated out of registry with the keyway **38** so that the surface **116** of the key **114** is caused to engage the lowermost surface of the closure plate **32.** Thus a connection of the fluid delivery body **18** with the valve body **12** is achieved as the key **114** becomes transversely oriented with respect to the keyway **38.**

Moreover, it is important to note that the length of the pin **92** is such that the pin **92** must be displaced against the compression spring **106** in order for the base surface **80** of the fluid delivery body to seat against the upper surface of the closure plate **32.** Hence, the valve plate **88** is lifted out of sealing relationship with the bores **82** as the fluid delivery body **18** is seated within the chamber **34.** It is, therefore, to be understood that as the fluid delivery body **18** is inserted into the chamber **34** the key **114** is received by the keyway **38** and the key well **58** and thereafter the valve plate **88** is lifted for opening the bores **82.** By imparting **90°** of angular displacement to the fluid delivery body **18,** for affecting a connection between the bodies **12** and **18,** a communicating fluid passageway is completed through the valve body **12** and the fluid delivery body **18.**

The fluid delivery body **18** can readily be disconnected from the valve body **12** by reversely displacing the fluid delivery body to a position such that the key **114** is again aligned with the keyway **38** in the closure plate **32.** The fluid delivery body **18** now may be axially extracted from the chamber **34.** Of course, as an extraction of the fluid delivery body **18** from the chamber **34** occurs, the spring **106** reseats the valve plate **88** for thus trapping any fluid which may be found within the chamber **84.** Thus, a reverse flow of fluid from the fluid delivery body **18** is precluded.

While, not shown, it is to be understood that where desired a suitable indicator, such as a key and keyway coupling, may be provided for aiding in the aligning of the fluid delivery body **18** relative to the valve body **12** as the base segment **74** of the fluid delivery body is inserted into the chamber **34.** Moreover, a pair of radially extended ears **120** integrally related with the distal segment **76** of the fluid delivery body **18** is provided for assisting in the application of torque to the fluid delivery body for angularly displacing the key **114** relative to the keyway **38.**

As shown in FIG. **9,** the fluid delivery body **18** is further provided with a vent **122** which serves to introduce atmospheric pressure into the container **16** as toxic liquids are withdrawn from the container via the tap **10.** The vent **122** includes a segmented bore having a first segment **124** extended in parallelism with the longitudinal axis of the fluid delivery body **18** and terminating at its opposite ends in first and second radially extended segments, designated **126** and **128.** As best illustrated in FIG. **1,** the radial segment **126** terminates in communication with the thread which circumscribes the internal surface of the base **28** so that atmospheric pressure is introduced into the segmented bore via a helical path when the fluid discharge body **18** is connected with the valve body **12.**

In order for the atmospheric pressure introduced into the bore segment **124** to be delivered to the interior of the container **16,** the sleeve **30** is provided with a pair of orifices **130,** one of which is extended radially therethrough in coaxial relation with the bore segment **128,** while the sleeve **42** is provided with a pair of orifices **132** which extends radially therethrough at a position such that the orifices **132** are in registry with the orifices **130** when the fluid delivery body **18** is connected with the valve body **12.** Thus the atmospheric pressure introduced into the bore segment **126** is delivered into the interior of a container **16** via the vent **122.**

It is important to note that, where desired, the pin **92** may be secured within the bore **90** and vacuum introduced through the conduit **109** relied upon for lifting the valve plate **88** out of sealing relationship with the bores **82,** in sliding relation with the surface of the pin.

While the fluid delivery body **18,** as illustrated in FIGS. **1** and **7** through **9,** serves quite satisfactorily for purposes of connecting the valve body **12** with a source of vacuum for extracting toxic liquids from the container **16,** without subjecting a handler to contamination, it often, in practice, is found desirable to manually pour the contents from the container **16.** In order to accommodate a manual pouring of the liquids from the container, either of a toxic or non-toxic nature, through the valve body **12,** there is provided a modified fluid delivery body, generally designated **134,** FIGS. **10** through **12.**

The fluid delivery body **134,** as shown, includes a base segment **136,** through which this body is coupled to the valve body **12,** and a distal segment **137** which serves as a pouring spout. A closure plate **138** is provided at the base end of the body **134** and includes a pair of spaced ports **139.** Like the base segment **74** of the fluid delivery body **18,** the outside diameter of the base segment **136** is approximately equal to, but slightly less, than the internal diameter of the chamber **34,** and the outside diameter of the distal segment **137** is approximately equal to, but slightly less, than the internal diameter of the base **28** of the valve body **12** for accommodating an insertion of the base segment **136** into a concentric relationship with the chamber **34.**

An annular shoulder **140** is provided at the juncture of the base segment **136** with the distal segment **137.** It should therefore be apparent that the axial length of the base segment **136,** from the shoulder **140** to the outermost surface of the closure plate **138** is such that the shoulder **140** is caused to seat on the gasket **72**

when the fluid delivery body **134** is fully seated and mated with the valve body **12.**

In order to effect a mating of the fluid delivery body **134** with the valve body **12,** the fluid delivery body **134** also is provided with a key, designated **142,** and affixed to the closure plate **138** by a suitable pin **144** rigidly secured to and projected from the closure plate **138.**

As a practical matter, the key **142** also includes a planar surface, designated **146,** spaced from the adjacent surface of the closure plate **138** a distance substantially equal to the thickness of the closure plate **32.** The ports **139** of the closure plate **32** also are spaced apart a distance equal to the distance between the ports **36** and are so oriented relative to the position of the key **142** that the ports **139** are caused to become aligned with the ports **36** once the fluid delivery body **134** is rotated through an angular distance of **90°** for effecting a coupling between the fluid delivery body **134** and the valve body **12,** in the manner more fully described in connection with the description of the fluid delivery body **18.**

Additionally, the base segment **136** is provided with a pair of radially directed, diametrically opposed orifices **148,** each of which aligns itself with an orifice **130** of the sleeve **30** once the fluid delivery body **134** is inserted into the chamber **34** and advanced through an angular distance of **90°** for connecting the fluid delivery body **134** with the valve body **12.** It should be appreciated that once the base segment **136** is inserted into the chamber **34,** with the key **142** being received within the key well **58,** the fluid delivery body **134** is prepared to be rotated through an angular distance of **90°** for repositioning the key **142** in a transverse relationship with the keyway **38** for effecting a coupling of the fluid delivery body **134** with the valve body **12.** With the fluid delivery body **134** thus coupled to the valve body **12,** each of the orifices **148** is disposed in coaxial alignment with the now aligned ports **130** and **132.**

A handler may now lift the container **16** and initiate a pouring operation, whereupon liquid confined within the container **16** is introduced into the fluid delivery body **134** and the valve body **12** via each of the orifices **148.** Atmospheric pressure is introduced into the container **16** via the opening of the spout or distal segment **137,** since the liquid cannot completely fill this segment as pouring occurs. This pressure is delivered thence through the aligned ports **36** and **139** of the fluid delivery body **134** and valve body **12,** the bores **54** and the siphon tube **20.** Thus, a pouring of the liquid from the container **16** is facilitated, as atmospheric pressure enters the container **16** via the siphon tube **20.**

Upon completion of the pouring operation, the fluid delivery body **134** is rotated through **90°,** in a reverse direction, for again aligning the key **142** with the keyway **38,** whereupon the fluid delivery body **134** may be extracted from the chamber **34** for completing an uncoupling of the fluid delivery body **134** from the valve body **12.**

Moreover, in practice, it may be found desirable to mount the valve body **12** for axial motion relative to the discharge orifice **14,** such as, for example, when the fluid delivery body **134** is to be employed in manually pouring the contents from the container **16.** As illustrated in FIG. **13,** such a mounting of the valve body **12** can readily be effected by employing a flexible collar **150** in lieu of the rigid collar **22.** The flexibility of the collar **150** is such that the valve body **12** may be lifted in order to form a well, not shown, about the valve body **12** for enhancing the pouring of the operation, while accommodating a retraction of the valve body to a position such that handling and stacking of the container **16** are facilitated.

OPERATION

It is believed that in view of the foregoing description, the operation of the device will readily be understood and it will be briefly reviewed at this point.

The valve body **12** is inserted into the discharge orifice **14** of a selected container **16,** employing either the collar **22** or the collar **150,** at a point at which the container **16** is filled with a toxic chemical in its fluid state. The closure disk **68** is next inserted into the threaded base **28** so that the container **16** is prepared for delivery to a point of sale or similar destination. Subsequently, at a point of use, the disk **68** is removed from the base **28,** employing a tool having suitable prongs adapted to seat in the reliefs **70.** Where it is desired to deliver the contents of the container **16** to a chemical mixing system such as that disclosed in application Ser. No. **430,072,** the fluid delivery body **18,** having a conduit connected therewith, and with such a system, is inserted into the chamber **34** of the valve body **12,** and rotated through a distance dictated by the abutting shoulders **64** and **66** whereupon the bores **54** become aligned with the ports **36** and the bores **82.** Simultaneously with the seating of the key **114** in the key well **58,** the valve plate **88** is lifted for thus unsealing the bores **82.** As vacuum now is applied to the chamber **84,** via the aforementioned conduit, a siphoning of the contents from the interior of the chamber **16** via the siphon tube **20** occurs. Fluid thus drawn from the container **16** is transmitted via the conduit connected with the coupling **109** to the mixing chamber of the mixing system. Of course, as the fluid is thus extracted from the container **16,** a venting to atmosphere is achieved through the vent **122.**

So long as the fluid delivery body **18** remains coupled with the valve body **12,** fluid within the conduit connected with the coupling **109** is permitted to experience a reverse flow back into the container, once the vacuum established within the mixing system is terminated. However, once the fluid delivery body **18** is extracted from the valve body **12,** the spring **106** becomes effective for reseating the valve plate **88** for thus entrapping fluid confined within the conduit and within the chamber **84** for thereby substantially eliminating the occurrence of a reverse flow from the fluid delivery body **18.** Thus a handler is protected against spashing and the like, as the fluid delivery body **18** is uncoupled from the valve body **12.**

When employing the fluid delivery body **134,** the base segment **136** is inserted into the chamber **34** a distance sufficient to cause the shoulder **140** to seat against the gasket **72** and the key **142** to seat in the key well **58.** The fluid delivery body **134** is now rotated through **90°** for repositioning the ports **139** and the bores **54** into coaxial alignment with the ports **36,** in the manner similar to that hereinbefore described in connection with the description of the operation of the fluid delivery body **18.**

An operator upon lifting the container then permits the fluid to flow through the aligned orifices **130** and **132** into the fluid delivery body **134** while atmospheric pressure is introduced into the container **16,** via the

aligned ports 36 and 139 and the bores 54 and the siphon tube 20.

Of course, where the valve body 12 is mounted employing the flexible collar 150, the valve body may be elevated sufficiently for causing a well to form about the valve body for enhancing the delivery of the contents from the container 16.

In view of the foregoing, it should readily be apparent that the tap embodying the principles of the instant invention provides a practical solution to the perplexing problem of discharging toxic chemicals in fluid form from containers at the situs of use, without subjecting handlers to contamination through inhalation and contact with the liquid.

Although the invention has been herein shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the illustrative details disclosed.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A tap particularly adapted to be seated in the discharge orifice of an hermetically sealable container and function in a first mode for hermetically sealing the orifice and in a second mode for facilitating the discharge of liquid contents from the container comprising:

A. a valve body adapted to be inserted into the discharge orifice of an hermetically sealable container and affixed thereto including an axially extended sleeve and a collar for supporting said sleeve in said discharge orifice including a closure plate affixed to the lowermost end of said sleeve in transverse relation therewith, having a pair of spaced ports defining a first fluid passageway, and valving means displaceable between a valve-open position and a valve-close position relative to said first passageway including a ported block telescopically related to said sleeve and supported thereby for oscillatory motion relative thereto between a closed position and an open position, and means defining a pair of spaced bores extended through said ported block in communication with said pair of ports when said ported block is in said open position;

B. a fluid delivery body having means defining therein a second fluid passageway extended therethrough including means for connecting said valve body with a remote source of vacuum, and means for introducing atmospheric pressure into said container as contents are discharged therefrom;

C. removable coupling means for releasably connecting said fluid delivery body with said valve body; and

D. means responsive to motion imparted to said movable coupling means for displacing said valving means to a valve-open position.

2. The tap of claim 1 wherein said means for introducing atmosphere into said container includes a bore having an axially extended segment terminating at each of its opposite ends in a radially extended segment.

3. The tap of claim 2 further comprising means for defining in said sleeve a first radially projected port coaxially aligned with a radially extended segment of said bore, and means defining in said ported block a second radially projected port disposed in registry with said first radially projected port when said ported block is in said opened position.

4. A tap adapted to function in a first mode for hermetically sealing a container for a body of liquid and to function in a second mode for facilitating the discharge of liquid from the container comprising:

A. a valve body adapted to be inserted into the discharge orifice of an hermetically sealable container for a body of liquid and affixed thereto, including means defining therein a receiver of a cylindrical configuration;

B. means defining in said valve body a first fluid passageway therethrough;

C. means connected with said valve body for selectively opening and closing said first fluid passageway including a ported block supported by said valve body for angular displacement between an opened position and a closed position relative to said first fluid passageway;

D. a fluid delivery body of a cylindrical configuration adapted to be inserted into said receiver and supported thereby for oscillatory motion relative to said valve body, including means defining a second fluid passageway extended through said delivery body communicating with said first fluid passageway when said ported block is in said open position; and

E. coupling means for releasibly connecting said fluid delivery body with said valve body, including a key projected axially from said fluid delivery body, and means defining in said ported block a key well for receiving in mated relation the distal end of said key, whereby angular displacement imparted to said fluid delivery body is transmitted to said block through said mated key and key well, so that the ported block is caused to be displaced along an arcuate path, between said opened and closed positions, in response to oscillatory motion imparted to said fluid delivery body.

5. The tap of claim 4 wherein said fluid delivery body includes means for connecting said valve body with a remote source of vacuum.

6. The tap of claim 4 wherein said fluid delivery body includes means defining a pouring spout.

7. The tap of claim 4 wherein said fluid delivery body further includes means for connecting said second fluid passageway with a conduit extended from a selectively operable source of vacuum, whereby a vacuum selectively is introduced into said container through said first and second fluid passageways for establishing a flow of liquid from said container to said source via said conduit.

8. The tap of claim 7 wherein said fluid delivery body further includes means defining therein a fluid passageway for venting said container to atmosphere as said flow of liquid is established therefrom.

9. The tap of claim 8 wherein said fluid delivery body includes movable valving means displaceable from a closed position and an opened position relative to said second fluid passageway in response to an insertion of said key into said key well, and from an open position to a closed position in response to a removal of said key from said key well for thereby preventing a reverse flow of liquid from said conduit.

10. The tap of claim 9 further comprising means defining a helical thread extended along the internal surface of said receiver, and a closure disk adapted to seat in said receiver in a closing relation with said receiver

having a peripheral thread adapted to mate with said helical thread.

11. The tap of claim **10** further comprising a siphon tube extended from said valve body into engagement with the bottom surface of said container.

12. A tap particularly adapted to be seated in the discharge orifice of an hermetically sealable container and function in a closed mode for hermetically sealing the orifice and in an opened mode for facilitating the discharge of liquid contents from the container, comprising:

A. a valve body including a first sleeve of a substantially cylindrical configuration, a collar concentrically related to the sleeve and adapted to support the sleeve in the discharge orifice of an hermetically sealable container, and a transverse closure plate disposed across one end of the sleeve having a port defined therein;

B. valving means including a ported block displaceable between angularly related opened and closed positions for alternately opening and closing said tap, having a base and a second sleeve integrally related with said base, said second sleeve being disposed in a telescopically encasing relationship with said first sleeve and supported thereby for angular displacement, whereby angular displacement of said ported block between opened and closed positions is facilitated, and means defining a bore extended through said base into communication with said port when said ported block is in said opened position;

C. means for discharging liquid contents from the container including a fluid delivery body of a substantially cylindrical configuration adapted to be received within said first sleeve of said valve body, in a coupled relationsip with the valve body, including means defining therein a fluid passageway extended therethrough and adapted to be placed in communication with said port when the fluid delivery body is received within said valve body in a coupled relationship therewith; and

D. movable coupling means for releasably coupling said fluid delivery body within said valve body including a key projected axially from said fluid delivery body, and means defining in the base of said ported block a key well for receiving said key.

13. The tap of claim **12** wherein said fluid delivery body includes a pouring spout.

14. The tap of claim **12** wherein said fluid delivery body includes means adapted to connect the fluid delivery body to a remote source of vacuum.

15. The tap of claim **12** wherein said port comprises one of a pair of diametrically spaced ports, and said bore comprises one of a pair of diametrically spaced bores.

16. The tap of claim **12** further comprising means for introducing atmospheric pressure into said container as contents are discharged therefrom.

17. The tap of claim **12** wherein said means for introducing atmosphere into said container includes a segmented bore defined in said fluid delivery body having an axially extended segment terminating at each of its opposite ends in a radially extended segment.

18. The tap of claim **17** further comprising means defining in said first sleeve a first radially projected port, and means defining in said second sleeve a second radially projected port disposed in registry with said first radially projected port and a radially extended segment of said segmented bore when said fluid delivery body is received by said valve body and said ported block is in said open position.

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