No. 783,189. PATENTED FEB. 21, 1905.

W. M. FOWLER.

FILLER TIP.

APPLICATION FILED SEPT. 25, 1903.

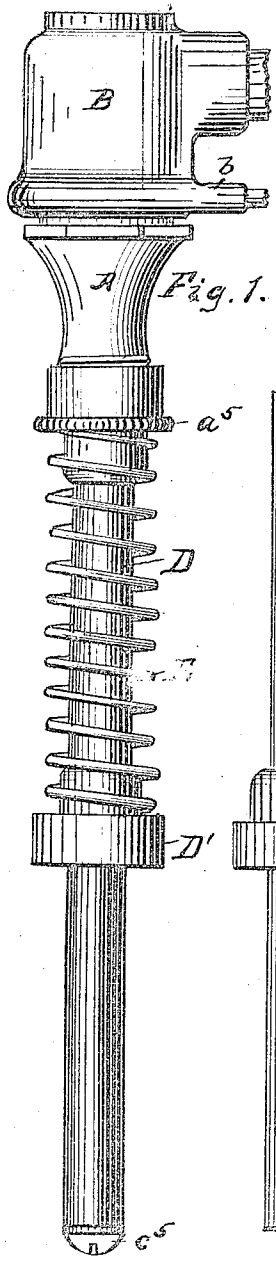


Fig. 1.

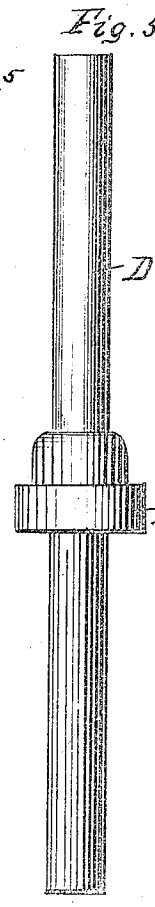


Fig. 5.

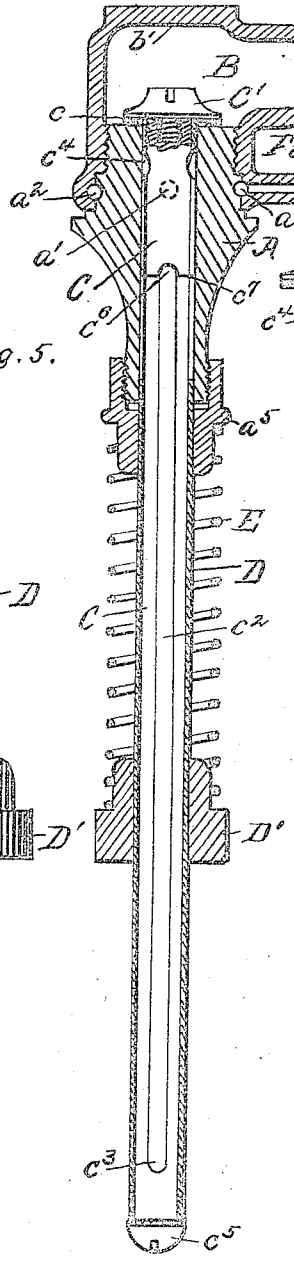


Fig. 2.

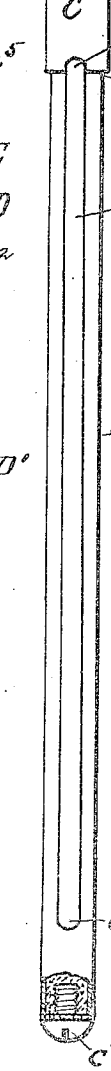


Fig. 4.

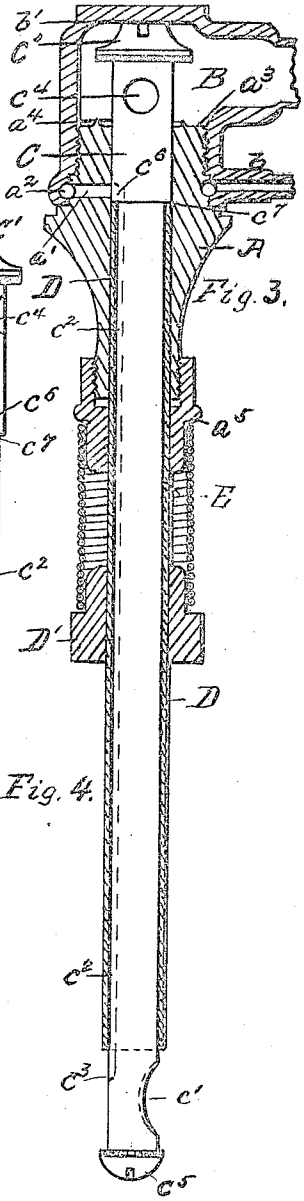


Fig. 3.

WITNESSES:

Ed. W. Benjamin

F. Sullivan

INVENTOR:

William M. Fowler.

No. 783,189. Patented February 21, 1905

UNITED STATES PATENT OFFICE.

WILLIAM M. FOWLER, OF STAMFORD, CONNECTICUT

FILLER-TIP.

SPECIFICATION forming part of Letters Patent No. 783,189, dated February 21, 1905.

Application filed September 25, 1903. Serial No. 174,572.

To all whom it may concern:

Be it known that I, WILLIAM M. FOWLER, a citizen of the United States, residing at Stamford, county of Fairfield, State of Connecticut, have invented certain new and useful Improvements in Filler-Tips, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same.

My invention relates to a filler-tip in which a filler-tube for entering the bottle-neck extends from a liquid-reservoir through a plug seated in the reservoir-wall and has a liquid-discharge and an air-vent, which discharge and the inlet of said air-vent are usually governed by a valve, generally in the form of a sleeve having reciprocatory play on the tube, the valve being thrown against the stress of a controlling-spring to uncover said tube-discharge and the air-vent inlet by the impingement of a sealing-flange, carried by the valve, upon the bottle-mouth. In filler-tips of this class the filler-tube has generally had constant and open communication at its inlet end with the liquid-reservoir, while the air-vent has had similar communication with an air outlet or overflow; but under these conditions when the apparatus is at rest liquid in the filler-tube, under the influence of pressure in the reservoir, is liable to leak therefrom through the tube's discharge-aperture and find its way into the air-vent and between the tube and its sleeve-valve when such valve is employed, to the detriment of the operation of the apparatus.

The principal object of my present invention is to prevent such leakage, and thus overcome this objectionable action.

My invention consists, primarily, in the combination, in a filler-tip with a longitudinally-bored plug to seat in a liquid-reservoir and provided with an air-outlet, of a spring-controlled motion-limited filler-tube closed at its upward or inward end, a liquid-discharge at its downward or outward end, and a longitudinally-extending air-vent and slidably seated to reciprocate longitudinally in the plug to simultaneously govern the liquid-inlet and the outlet of the air-vent of said tube relatively respectively to the interior of the liquid-reservoir and to the air-outlet in the plug, and means to govern the liquid-discharge and the air-vent inlet of said tube; and my invention also comprises the combination, in a filler-tip with a longitudinally-bored plug to seat in a liquid-reservoir, of a spring-controlled motion-limited filler-tube and sleeve-valve having reciprocatory play thereon, the said tube being closed at its upward or inward end and having a laterally-formed liquid-inlet in its wall near its said upward or inward end, a liquid-discharge at its downward or outward end, and a longitudinally-extending air-vent to communicate with an air-outlet, and said filler-tube and its sleeve-valve being slidably seated to reciprocate longitudinally in said plug to govern the liquid inlet and outlet, and the air-vent of said tube; and my invention includes the combinations of elements which constitute the desirable forms and parts employed adjunctively to the fundamental features of the invention whereby advantages hereinafter recited are secured; and my invention also comprises the combinations of elements which constitute desirable forms and parts employed adjunctive to the fundamental features of the invention.

In the drawings, Figure 1 is an elevation of a filler-tip containing my invention. Fig. 2 is a longitudinal central sectional view of the same, showing the several parts in relative position when the apparatus is at rest. Fig. 3 is a similar view of the same, showing the parts in relative position when the apparatus is in operation. Fig. 4 is an elevation in detail of the filler-tube, and Fig. 5 is a similar view of the sleeve-valve usually employed in connection with the filler-tube.

In the filler-tip illustrated, A is a plug which is longitudinally bored, as shown, and seats, preferably by a threaded tap *a*, in a coupler B, which is in constant and open communication with and is a part of a liquid-reservoir (not shown) employed in bottle-filling machines. This plug usually is provided with a radial aperture a' in its body, establishing communication from its base to an outlet or overflow *b*, usually in the coupler and preferably through an annular groove or channel a^2 on the plug and lying within the coupler when said plug is seated therein, as shown.

C is the filler-tube, having a liquid-discharge, usually lateral, in its wall near its downward or outward end and an air-vent c^2, usually constituted by a depressed corrugation extending longitudinally in the exterior of the tube-wall, with its inlet c^3 near the downward or outward end of the tube. D is a valve usually employed to govern the discharge c' and the inlet c^3 of the air-vent of the tube and is generally in the form of a sleeve fitted to and having reciprocatory play on the tube and thrown to uncover said discharge and air-vent inlet by the impingement of a sealing-flange D', carried by said sleeve-valve, upon the mouth of a bottle in the operation of filling the same. A flanged stud c^5 is generally seated in the downward or outward end of the filler-tube to close the same and furnish a stop for the described valve. These parts are common to existing filler-tips, and while my invention is shown in connection therewith no claim to novelty therefor is made herein, nor are such parts, collectively or individually, in the precise forms thereof shown essential to the fundamental features of my invention.

In carrying out my invention the filler-tube is provided with a liquid-inlet constituted by an aperture or apertures c^4, formed laterally in the tube-wall near its upward or inward end, and the tube is slidably seated to reciprocate longitudinally in the base of the plug A, and its respective movements in its said reciprocation are limited by a head C', which is preferably in the form of a flanged stud screw-seated in the upward or inward end of the tube, and thus closing the same, a stop in the reservoir-coupler B, which may be a part b' of the coupler-wall, as shown, and a face a^3 on the top or inward end of the plug, desirably furnished with an annular projection a^4, the said head engaging said stop b' when the tube C is thrown inwardly in the plug to bring the inlet c^4 of said tube into communication with the interior of the reservoir-coupler and the flange of said head, desirably provided with an annular packing c, engaging the face a^3 on the plug when the tube is reversely thrown in the plug to draw its inlet c^4 within the plug-bore, and thus cut off communication between the tube and the reservoir.

The outlet c^6 of the air-vent c^2 of the filler-tube is so located on the tube that when said tube is thrown to the limit of its upward or inward movement in the plug to uncover the liquid-inlet c^4 of said tube the said air-vent outlet will register with the air outlet and overflow a' in the plug and so that when said tube is reversely thrown to close said inlet c^4 the said air-vent outlet c^6 will be withdrawn from said air-outlet a' and be closed by the wall of the plug-bore, whereby the tube C in its reciprocatory movements in the plug will simultaneously govern the liquid-inlet c^4 thereof and said outlet c^6 of its air-vent, and the air-vent will be wholly isolated when the apparatus is at rest.

When the sleeve-valve D is employed, as described, a shoulder c^7 is desirably provided on the tube C and preferably within the plug A, as shown, and engageable by the upward or inward end of said valve when the same is thrown to open the tube-discharge c' and the inlet c^3 of the air-vent, and a spring E, usually seated and tensioned between the shoulder of a gland a^5 of a stuffing-box on the plug and the sealing-flange D', is common to the control of the filler-tube as well as the sleeve-valve.

It is evident that in the operation of the apparatus herein illustrated and in which my present invention is shown when the sealing-flange D' impinges upon the mouth of a bottle as the tube is projected into the neck thereof and the spring E is thereby collapsed the filler-tube C in its upward or inward movement in the plug A, which in this case will be effected by the engagement of the sleeve-valve D with said tube at the shoulder c^7 thereon until the tube-head C' engages the stop b', will uncover the tube-inlet c^4, thus establishing communication between said tube and the reservoir, while the valve D also uncovers and opens the tube-discharge c', and at the same time when said valve uncovers and opens the air-vent inlet c^3 the described movement of the tube C will serve to cause the outlet c^6 of the air-vent to register with the air-outlet a' in the plug, the several parts being thus in operative position, as shown in Fig. 3, and that as the tube is retracted from the bottle-neck and the spring E expands the tube in its downward or outward movement in the plug under the stress of said spring until its flanged head C' engages the face a^3 on said plug and seals the top thereof will carry the tube-inlet c^4 within the walls of the plug-bore, thus cutting off communication between said tube and the reservoir, and at the same time when said valve D covers and closes the air-vent inlet c^3 the described movement of said tube C will serve to withdraw the air-vent outlet c^6 from the air-outlet a' in the plug, the several parts being thus in the position of rest, as illustrated in Fig. 2, and it is apparent that when the apparatus is at rest, as set forth, the filler-tube will be wholly relieved from the influence of any pressure in the reservoir and the described air-vent will be wholly isolated, so that the liability of leakage of liquid from the reservoir into the filler-tube or from said tube into the air-vent and a consequent possible clogging of the apparatus from this cause are precluded. A further advantage obtained by the described construction containing my invention is that the filler-tube and the plug, as well as the sleeve-valve when employed, may be readily disassembled by unseating the plug and detaching either the head C' of the tube or the

stud c^5 at its lower end, so that the several parts may be separately cleansed, whereupon they may be as readily reassembled.

It is apparent that variations in the forms of the essential elements of my invention may be made without substantial departure from the true features thereof. Therefore I do not limit myself herein to the specific forms shown and described of such novel and essential features.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a filler-tip, the combination with a longitudinally-bored plug to seat in a liquid-reservoir and having an air-outlet in its wall, of a spring-controlled, motion-limited filler-tube, closed at its upward or inward end and having a laterally-formed liquid-inlet in its wall near its said upward or inward end, a liquid-discharge at its downward or outward end and a longitudinally-extending air-vent, and slidably seated to reciprocate longitudinally in said plug, to simultaneously govern the said liquid-inlet and the outlet of the air-vent of said tube, relatively, respectively, to the interior of the liquid-reservoir and to the air-outlet in the plug, and means to govern the liquid-discharge and the air-vent inlet of said tube.

2. In a filler-tip, the combination with a longitudinally-bored plug to seat in a liquid-reservoir, of a spring-controlled, motion-limited filler-tube and sleeve-valve having reciprocatory play thereon, the said tube being closed at its upward or inward end and having a laterally-formed liquid-inlet in its wall near its said upward or inward end, a liquid-discharge at its downward or outward end and a longitudinally-extending air-vent to communicate with an air-outlet; and said filler-tube and its sleeve-valve being slidably seated to reciprocate longitudinally in said plug, to govern the liquid inlet and outlet and the air-vent of said tube.

3. In a filler-tip, the combination with a longitudinally-bored plug, to seat in a liquid-reservoir and having an air-outlet in its body, of a filler-tube, closed at its opposite ends and having a liquid-inlet and a liquid-discharge formed laterally in its wall near its respective opposite ends, a longitudinally-extending air-vent and an external shoulder, and slidably seated to have a motion-limited reciprocation in said plug, to govern the liquid-inlet and the air-vent outlet of said tube, relatively, respectively, to the interior of the reservoir and the air-outlet in said plug, and a sleeve-valve, fitted to and having reciprocatory play on said filler-tube, to govern the liquid-discharge and the air-vent inlet of said tube and to engage the shoulder on said tube and move the same when said valve is thrown to open the tube-discharge and the air-vent inlet, together with a controlling-spring, common to the filler-tube and sleeve-valve, to retract them to close, respectively, the liquid-inlet and the air-vent outlet, and the liquid-discharge and the air-vent inlet of said tube.

4. In a filler-tip, the combination with a longitudinally-bored plug, to detachably seat in a liquid-reservoir, of a filler-tube, slidably mounted in said plug, to govern its liquid-inlet and air-vent outlet, and having a head, removably seated in the upward or inward end thereof, to close the same and to limit the movements of said tube, together with means, carried by and separable from said tube, to govern the liquid-discharge and the air-vent inlet thereof.

5. In a filler-tip, the combination with a longitudinally-bored plug, to detachably seat in a liquid-reservoir, of a motion-limited, longitudinally-reciprocatory filler-tube, having a flanged head to close its end at said plug, and slidably seated in said plug, to govern its liquid-inlet and air-vent outlet, a sleeve-valve having longitudinally-reciprocatory play on said filler-tube, to govern the liquid-discharge and the air-vent inlet thereof, and a flanged stud removably seated in the opposite or outward end of said tube.

In testimony whereof I, WILLIAM M. FOWLER, have signed my name to this specification, in the presence of two subscribing witnesses, this 14th day of September, 1903.

WILLIAM M. FOWLER.

Witnesses:
JAMES E. CASTILO,
ARDEN S. FITCH.