April 15, 1952 H. D. AYARS 2,592,846

FILLER VALVE AND ACTUATING MECHANISM THEREFOR

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Fig. 1.

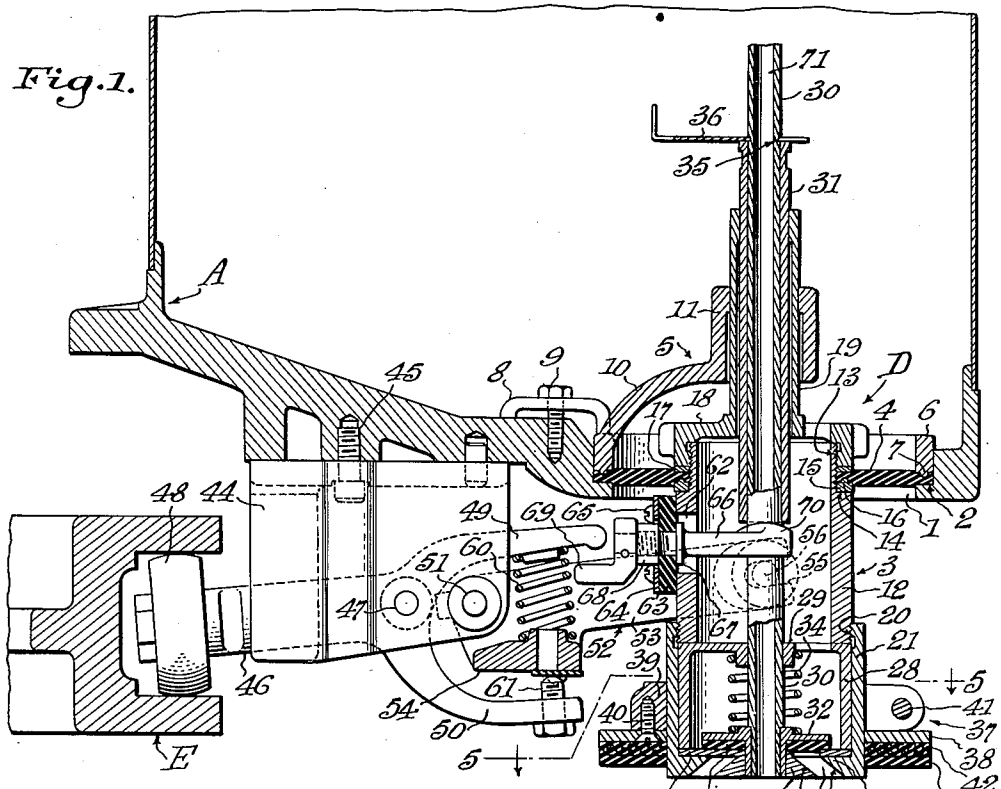
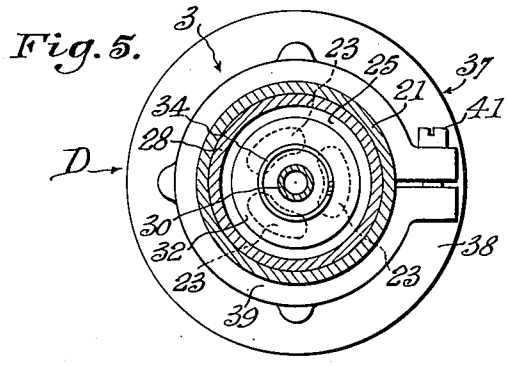


Fig. 5.



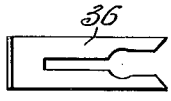
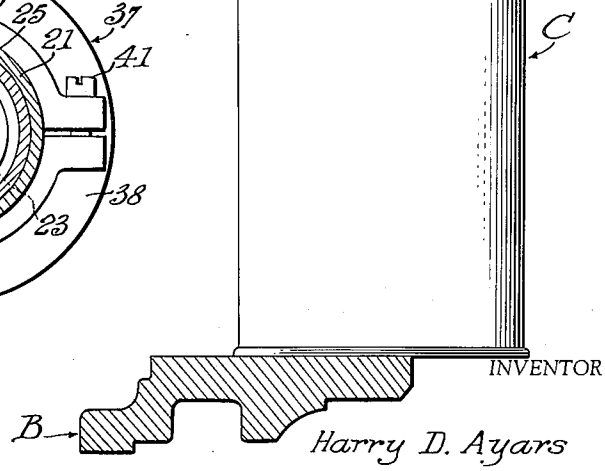


Fig. 9.



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FILLER VALVE AND ACTUATING MECHANISM THEREFOR

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Fig.2.

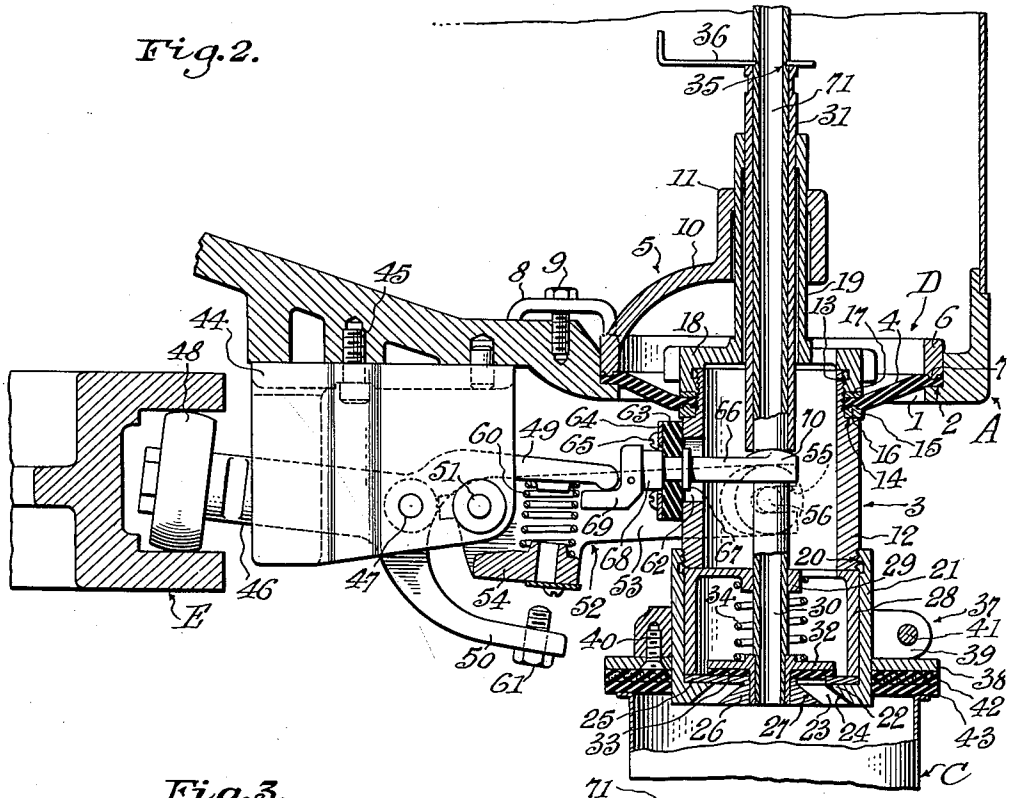
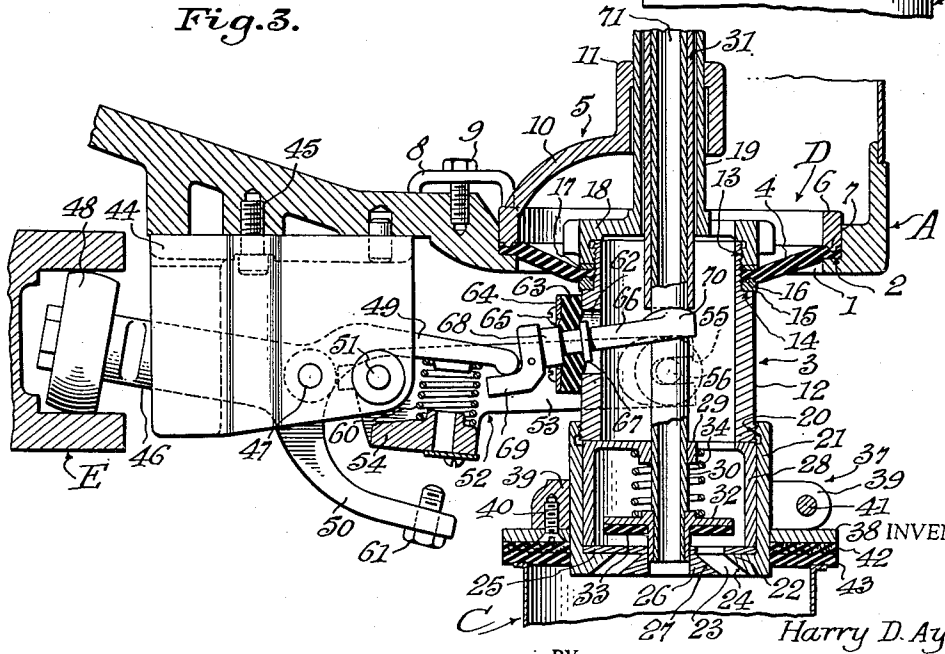


Fig.3.



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FILLER VALVE AND ACTUATING MECHANISM THEREFOR

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Fig.6.

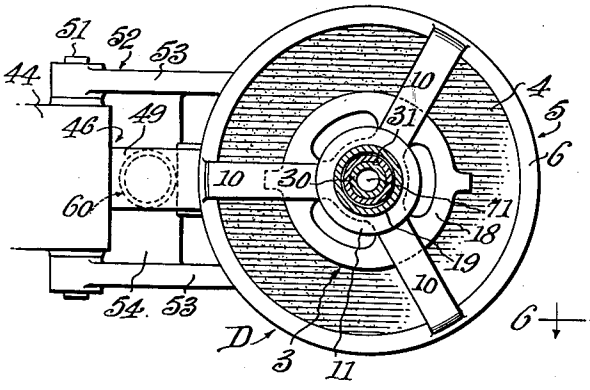


Fig.4.

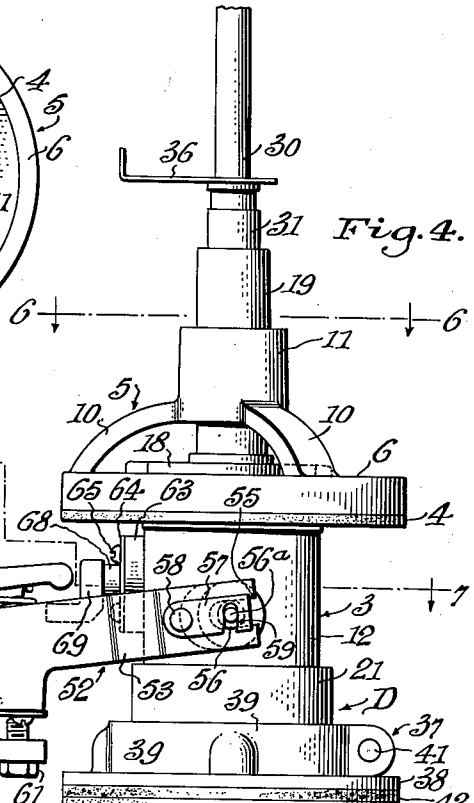
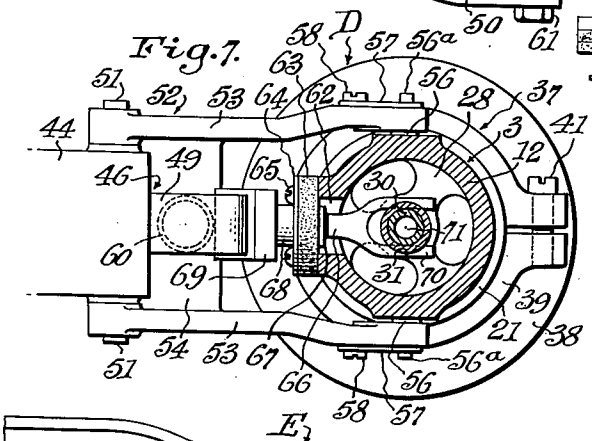


Fig.7.



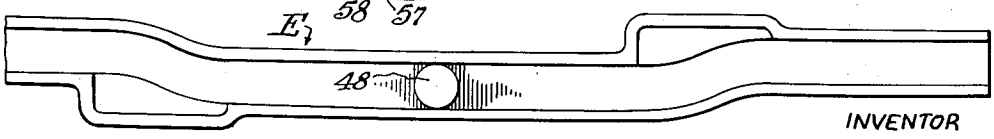


Fig.8.

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2,592,846

UNITED STATES PATENT OFFICE

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FILLER VALVE AND ACTUATING MECHANISM THEREFOR

Harry D. Ayars, Salem, N. J.

Application September 27, 1949, Serial No. 118,148

17 Claims. (Cl. 226—98)

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This invention relates to filler valves and mechanism for actuating such valves. More particularly the invention relates to filler valves and valve actuating mechanism for use in connection with apparatus for filling open top containers.

Heretofore it has been customary or most conventional for container filling machines to be so constructed as to move an empty open top container upwardly into sealing engagement with a relatively fixed filler valve body or adjacent part, then to open the valve to permit the flow of filling material into the container, and then, when the filling has been completed, to lower the container. Such an arrangement imposes marked limitations on the speed with which the machine can be operated, since the vertical movement of the containers results in splashing and spilling of the liquid when the machines are operated at a high speed.

An object of the present invention is to provide a filler valve and associated actuating mechanism of new and improved construction and in the operation of which the valve body or a part in connection with it, such as a sealing ring or head, moves downwardly into contact with the top rim of the container to be filled, and is then moved upwardly after filling, instead of moving the container upwardly and then downwardly, as in the more conventional machines. By eliminating the upwardly and downward movement of the container, the principal cause of spilling is eliminated, and greatly increased speed of operation is made possible.

It has heretofore been proposed broadly, in connection with container filling machines, to provide for the raising and lowering of the valve body instead of the container. Mechanism embodying the present invention differs from those previously proposed by the inclusion of novel constructional features and cooperative arrangements of the parts resulting in the advantages of simplicity of construction, ease with which the valve may be taken apart for cleaning, and sureness of operation, even at high speeds.

A particular object of the invention is to provide an improved construction of the kind referred to in which certain of the relatively movable parts are sealed or inter-related to provide liquid-tight connections without the use of very close working fits or packing glands.

A further object of the invention is to provide new and improved mechanism for sequentially moving a filler valve into sealing engagement with a container, and then, with delayed action, opening the valve, the mechanism preferably including a single actuating member operable in a continuous movement for effecting the desired sequence of operations.

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Other objects will become apparent from a reading of the following description, the appended claims, and the accompanying drawings, in which:

Figure 1 is a vertical, sectional view of a filler valve assembly and actuating mechanism therefor embodying the invention, shown in connection with portions of a conventional support and filler tank or reservoir, the valve and actuating parts being shown in the positions normally occupied before a filling operation has begun;

Figure 2 is a view similar to Figure 1 showing the parts in the positions occupied when the filler valve assembly and a container are in contacting relation, but prior to operation of the valve for admitting flowable filling material from the tank into the container;

Figure 3 is a view similar to Figure 2, but showing the valve open for admitting filling material from the tank to the container;

Figure 4 is an elevational view of the parts shown in normal positions;

Figure 5 is a detail, sectional view on the line 5—5 of Figure 1;

Figure 6 is a horizontal, sectional view on the line 6—6 of Figure 4;

Figure 7 is a horizontal, sectional view on the line 7—7 of Figure 4;

Figure 8 is a fragmentary developed view of a cam; and

Figure 9 is a detail plan view of a detachable spring clip or blade for holding certain parts in operative relation.

Filler valve constructions and actuating mechanism embodying the invention may be used in connection with filling machines of various kinds which may be conventional except for the valve and actuating means, a representative embodiment of which is disclosed in the accompanying drawings. The valve and actuating mechanism are shown as being carried on the bottom of a toroidal reservoir or tank A positioned above a support B for holding a container C about to be filled. The tank A, support B, and filler valve D may turn around a central column, not shown, in the manner of a turret. If desired, a plurality of filler valves D may be deployed around the tank to provide a plurality of filling stations. Such turret arrangements are generally known in the art, and no detailed illustration of the conventional parts other than those shown in the drawings is believed to be necessary.

The present invention resides more particularly in the construction of the filler valve itself, and the associated means for actuating the valve. In the form shown, the reservoir or tank A is formed with a bottom opening 1 which is counterbored to provide a shoulder 2. Mounted for vertical movement in the opening 1 is a filler valve body generally designated 3. In accordance with the invention, movement of the valve body 3 within the opening 1 and with respect to the tank A and support B, while still maintaining the opening 1 sealed, is achieved without the use of close sliding fits or packing glands. Instead, a flexible diaphragm or wall 4, which may be of rubber or other suitable plastic or flexible material, is arranged to span the opening 1 between the valve body 3 and the wall of the opening, and is secured in sealed relation with the body 3 and the wall of the opening. To this end, the marginal part of the flexible wall 4 overlies the shoulder 2 and is held in place by a spider 5, which is formed with a ring base 6 having a rib or ridge 7 pressed down into the margin of the wall 4 for forming an effectively sealed fluid-tight joint. Preferably, the spider 5 is arranged to be clamped down tightly but to be easily detachable, and in the form shown this is accomplished by a plurality of C clamps 8 and securing screws 9, one of each of which is shown in Figures 1, 2, and 3. The spider 5 also comprises spaced arms 10 which terminate at their upper ends in a fixed guide part 11 axially aligned with the valve body 3.

The inner edge portion of the flexible wall 4 is fitted over the upper end of a valve body proper 12, which is threaded as at 13 and is formed with a shoulder 14 supporting a ring 15 formed with a rib or ridge 16 positioned to press into the flexible wall 4. A washer 17, surrounding the threaded part 13 of the valve body proper 12, is clamped down against the top of the wall 4 by an upper end cap 18 which is screwed on the threaded part 13. The end cap 18 is formed integrally with a guide part 19 which extends through the guide part 11 on the spider 10.

The lower end of the valve body proper 12 is threaded at 20 to receive a lower end cap 21 which has an inwardly extending bottom flange or wall 22 defining a discharge port 23, the circular outer wall 24 of which is flared downwardly and outwardly. A deflector disc 25 is positioned on the top of the flange or wall 22, and is formed with a downwardly projecting central part 26 having an outwardly and downwardly flared peripheral wall 27 disposed concentrically with respect to the wall 24, the arrangement being such that filling liquid flowing down through the space between the walls 24 and 27 is deflected or spread outwardly and downwardly.

Interposed between the valve body proper 12 and the deflector disc 25 is a cylindrical insert 28, the top of which is formed with a combined lower guide and spring seat 29. When the end cap 21 is screwed on the threaded lower end 20 of the valve body proper 12, the insert 28 and deflector disc 25 are clamped tightly in fixed position so as to provide a complete valve body assembly comprising the upper end cap 18, valve body proper 12, insert 28, deflector disc 25, and lower end cap 21.

A hollow valve stem 30 is mounted to slide in the lower guide part 29, and extends upwardly through a sleeve 31 which is slidable in the guide part 19 on the top end cap 18. Attached to the lower end of the stem 30 is a metal valve disc 32 provided with rubber or other suitable facing 33. The valve element 32—33 is normally held down by a compression spring 34 interposed between the disc 32 and the spring seat 29. Thus, the valve element comprising the disc 32 and facing 33 normally closes the discharge port in the valve body, the arrangement being such, however, that the spring 34 can yield to permit the valve element 32—33 to be raised by actuating mechanism described later, so as to open the discharge port. Raising of the valve stem 30 and valve element is accomplished by raising the sleeve 31, which is operatively connected to the stem 30 by a detachable device arranged to be easily accessible exteriorly of the valve structure. In the form shown, the detachable connection device comprises a circumferential groove 35 in the stem 30 and a spring clip or blade 36, which is bifurcated as shown in Figure 9 so as to fit with a snap action in the groove 35, and thus provide an abutment on the stem 30 against which the top of the sleeve 31 presses.

When a container is to be filled, the entire valve construction including the body 3 is moved downwardly so as to be in sealed contact with the open upper end of the container. In the construction shown, the valve body 3 is equipped with a sealing ring, generally designated 37, including a disc 38 secured to a split clamping ring 39 by screws 40. The clamping ring 39 surrounds the lower end cap 21 and is adapted to be adjusted vertically with respect to the end cap for varying the extent to which the end cap extends into a container, and thus controlling the volume of liquid deposited in the container. The clamping ring may be held in adjusted position by tightening a clamping screw 41. A layer 42 of cushioning material such as "Celltite" cushion rubber or the like is cemented or otherwise secured to the bottom of the disc 38, and is faced with a conventional sealing gasket 43. When the valve body 3 is moved downwardly, the sealing gasket 43 engages and seals the top rim of the container C, thus preparing for the filling of the container with liquid by raising of the valve element 32—33 by mechanism now to be described.

In accordance with the invention, the mechanism for lowering the valve body 3 into sealed engagement with the container C, and for opening the filler valve is of a new and advantageous construction by means of which the valve body 3 is moved downwardly into engagement with the container and then, with delayed action, the valve element 32—33 is raised. Preferably, the construction is such that the valve body 3 is lowered, and the valve element 32—33 is raised with delayed action by the operation of a common or single actuating means. In the illustrative mechanism, a bracket 44 is secured by screws 45 to the bottom of the tank A. An actuating lever 46 is pivoted at 47 on the bracket 44, and is provided at its inner end with a cam follower roller 48 cooperable with the cam track E. The outer end of the lever 46 is forked to provide bifurcations or parts 49 and 50 spaced vertically with respect to each other. Also pivoted on the bracket 44 as at 51 is a valve body operating lever 52 comprising two arms 53—53 and a connecting part or strap 54. The arms 53—53 extend alongside opposite sides of the valve body 3, and are forked or slotted at 55—55 to receive pins 56—56 fast with the valve body 3. Retainer clips 57 pivoted at 58 to the arms 53, respec-

tively, and formed with slots 59 for engaging reduced ends 56a on the pins 56 to maintain the arms 53 and pins 56 against accidental disconnection.

For transmitting motion from the lever 46 to the valve body operating lever 52 to move the valve body 3 downwardly, a spring 60 is interposed between the upper part 49 of the lever 46 and the strap 54 of the lever 52. Thus, when the lever 46 is rocked clockwise as viewed in Figures 1, 2, 3, and 4, the bifurcation 49 of the lever 46 pushes downwardly through the spring 60 to move the strap 54 of the lever 52 downwardly, and thereby rock the lever 52 clockwise so as to lower the valve body 3 and bring the sealing gasket 43 into engagement with the top of the container C. When such sealing engagement has been established firmly, continued rocking of the lever 46 will be absorbed, so to speak, by yielding of the spring 60 while the lever 52 remains stationary.

When the lever 46 is returned, that is, rocked counterclockwise to relieve the pressure on the spring 60, the resiliency of the flexible wall 4 will tend to raise the valve body 3. However, to insure positive raising of the valve body completely to its normal position, the lower bifurcation or part 50 of the lever 46 is arranged to push upwardly against the strap 54 so as positively to rock the valve body operating lever 52 and lift the valve body 3. Preferably, the bifurcation 50 is equipped with a contact screw 61 adapted to be adjusted so as to determine the timing and amount of positive lifting movement transmitted to the valve body 3.

Mechanism preferably operated by the actuating lever 46 previously referred to is provided for operating the valve element 32—33 with a delayed action, following movement of the valve body 3 into sealed engagement with the container C. In the form shown, the valve body proper 12 is provided with a side opening 62 which is covered by a flexible closure in the form of a diaphragm or plate 63, which may be of rubber or other suitable plastic or flexible material. The closure 63 is secured in sealed relation to the body proper 12 by a metal ring 64 and screws 65. The closure 63 is apertured centrally to receive a valve element operating lever 66, which projects from outside the valve assembly to the interior of the valve body. The lever 66 is formed with a flange 67, and is provided with a collar 68 threaded on the left end of the lever so as to draw the flange 67 and collar 68 into clamping engagement with opposite faces of the closure 63, thereby sealing the aperture therein against the escape of fluid. The collar 68 is provided with an offset end part 69 which extends below the upper bifurcation or part 49 of the actuating lever 46, being normally in spaced relation to the part 49, but in its operating path. The end of the lever 66 which projects into the valve body is bifurcated and forked as at 70 so as to provide rounded portions underlying and being in engagement with the bottom end of the sleeve 31.

When the actuating lever 46 is rocked clockwise, it first moves with lost motion with respect to the valve element operating lever 66 until the bifurcation 49 of the lever 46 engages the offset end part 69 of the lever 66. Thereafter, further rocking of the lever 46 rocks the lever 66 about its point of connection to the closure 63 as a fulcrum, causing the bifurcations 70 to press upwardly against and raise the sleeve 31, which

in turn presses against the spring blade 36 and raises the valve stem 30 and valve element 32—33.

In a normal cycle of operation, the parts will be initially in the positions shown in Figure 1, in which the valve body 3 is spaced above the container C and the valve element 32—33 is closed. Movement of the tank A and support B about the central column, or any other machine operation effective for rocking the lever 46, will cause the lever 46 to be moved to the position shown in Figure 2. During this movement, the lever 46, acting through the motion-transmitting spring 60, will rock the valve body operating lever 52 in the manner previously described, so as to move the valve body 3 downwardly, and bring the sealing gasket 43 into sealed contact with the upper end of the container C. Since the container C will block the valve body 12 against further downward movement, continued rocking of the actuating lever 46 will be in the positions shown in Figure 2, with the upper bifurcation 49 of the lever 46 just having made contact with the adjacent end of the valve element operating lever 66.

Continued rocking of the lever 46 will rock the lever 66, as is permitted by flexing of the closure 63, causing the bifurcation 70 of the lever 66 to raise the sleeve 31 and valve stem 30 in the manner previously described until the parts have reached the positions shown in Figure 3, wherein the bottom discharge port is uncovered by the lifted valve element 32—33. Fluid in the tank A will then flow downwardly through the open upper end of the valve body 3 and the discharge port, and will be deflected outwardly by the walls 24 and 27 so as to flow toward the outside of the container C. Air displaced from the container by the inflowing liquid will escape through the bore 71 of the stem 30, either to the atmosphere or to a source of vacuum.

When the container has been filled, the actuating lever 46 will rock counterclockwise so as first to permit the lever 66 and associated sleeve 31, valve stem 30, and valve element 32—33 to be returned to their normal or closed positions. Thereafter, the valve body 3 will be raised by the resiliency of the flexible wall 4 and by the action of the lower bifurcation 50 on the valve body operating lever 52.

It will be observed that the lever 46 operates as a common actuating means for the valve body 3 and the valve element 32—33, the actuating mechanism being so timed that the operating effort supplied by the single part 46 first moves the valve body 3 into sealed relation with the container C, and then, with delayed action, opens the valve element 32—33. Because the lever 66 is fulcrumed at a point farther from its point of connection to the sleeve 31 than from its point of engagement with the actuating lever 46, a quick opening movement of the valve element 32—33 is obtained. This makes for rapid filling operation.

The assembly of the valve is such that it may easily be taken apart for cleaning purposes. Thus, by removing the C clamps 8 and spider 5, and by taking off the end cap 21 or sealing ring 37, the valve assembly may be removed from the tank A without difficulty. If it is desired to clean the interior of the valve assembly, it is necessary only to unscrew the end caps 18 and 21 to enable all of the parts to be disassembled.

The construction shown embodies the invention in a preferred form, but it intended that

the disclosure be considered as illustrative rather than definitive, the invention being defined in the appended claims.

I claim:

1. In a container filling machine, a reservoir for flowable filling material having a horizontal bottom with an opening extending vertically therethrough; a horizontal support for holding a container under said opening; means maintaining said support against vertical movement; a filler valve body guided for vertical movements perpendicular to said support and in alignment with a container on said support; means providing a horizontal sealing face on the bottom of said valve body; a flexible wall secured respectively to the reservoir bottom at the walls of said opening and to said valve body so as to seal the opening between the walls thereof and said valve body and so as to mount said body for vertical movement relative to said reservoir bottom from a normal position out of engagement with the container downwardly into sealing engagement the container; a valve element carried by and movably mounted in said valve body for controlling the flow of material from said reservoir through said valve body and thence into said container; and means for first moving said valve body from normal position into sealing engagement with the container and then moving said valve element relatively both to said reservoir and to said valve body for opening the valve.

2. In a container filling machine, a reservoir for flowable filling material having a horizontal bottom with an opening extending vertically therethrough; a horizontal support for holding a container under said opening; means maintaining said support against vertical movement; a filler valve body guided for vertical movements perpendicular to said support and in alignment with a container on said support; means providing a horizontal sealing face on the bottom of said valve body; a flexible wall secured respectively to the reservoir bottom at the walls of said opening and to said valve body so as to seal the opening between the walls thereof and said valve body and so as to mount said body for vertical movement relative to said reservoir bottom from a normal position out of engagement with the container downwardly into sealing engagement with the container; a valve element carried by and movably mounted in said valve body for controlling the flow of material from said reservoir through said valve body and thence into said container; and means for first moving said valve body from normal position into sealing engagement with the container and then moving said valve element to open position comprising a common actuating member, a yieldable motion-transmitting connection between said actuating member and said valve body, and a delayed action motion-transmitting connection between said actuating member and said valve element.

3. In a container filling machine, a reservoir for flowable filling material having a horizontal bottom with an opening extending vertically therethrough; a horizontal support for holding a container under said opening; means maintaining said support against vertical movement; a filler valve body smaller exteriorly and horizontally than said opening and being guided for vertical movements perpendicular to said support and in alignment with a container on said support; means providing a horizontal sealing face on the bottom of said valve body; a resilient diaphragm secured to the exterior of said valve body in sealed relation thereof, horizontally spanning the space between said valve body and the wall of said opening, and being secured to said wall in sealed relation thereto, said diaphragm mounting said body for vertical movement relative to said reservoir bottom from a normal position out of engagement with the container downwardly into sealing engagement with the container; a valve element carried by and movably mounted in said valve body for controlling the flow of material from said reservoir through said valve body and thence into said container; and means for first moving said valve body from normal position into sealing engagement with the container and then moving said valve element to open position comprising a common actuating member, a yieldable motion-transmitting connection between said actuating member and said valve body, and a delayed action motion-transmitting connection between said actuating member and said valve element.

4. A construction as set forth in claim 3 in which means for guiding the valve body comprises a movable vertically extending guide part on said valve body, and a guide part having a base removably secured to the reservoir bottom and being positioned on said diaphragm and clamping the latter against the reservoir bottom in sealed relation thereto.

5. In a container filling machine, a support for a container to be filled; a filler valve body; means mounting said valve body above said support for movement from a normal position out of engagement with a container on the support downwardly into sealing engagement with the container; a valve element carried by and movably mounted in said valve body; and means for first moving said valve body from normal position into sealing engagement with the container and then moving said valve element to open position comprising a common actuating member, and mutually independent connecting means respectively between said common actuating member and said valve body and between said common actuating member and said valve element, said connecting means including a yieldable motion-transmitting spring between said actuating member and said valve body, and a lost-motion operating connection between said actuating member and said valve element.

6. In a container filling machine, a support for a container to be filled; a filler valve body; means mounting said valve body above said support for movement from a normal position out of engagement with a container on the support downwardly into sealing engagement with the container; a valve element carried by and movably mounted in said valve body; and means for first moving said valve body from normal position into sealing engagement with the container and then moving said valve element to open position comprising a common actuating lever, a valve body operating lever, a yieldable motion-transmitting spring connected between said two levers, and a valve element operating lever having a part normally in spaced relation to but in the operating path of a part of said common actuating lever so as to be operable by said common actuating lever with delayed action after movement of said valve body into engagement with the container.

7. In a container filling machine, a support for a container to be filled; a filler valve body; means mounting said valve body above said support for movement from a normal position out of engagement with a container on the support

downwardly into sealing engagement with the container; a valve element carried by and movably mounted in said valve body; and means for first moving said valve body from normal position into sealing engagement with the container and then moving said valve element to open position comprising a common actuating lever having a bifurcated end, a valve body operating lever having one of its ends connected to said valve body and having the other of its ends projecting between the bifurcations of said actuating lever, a compression spring between one of said bifurcations and said other end of said valve body operating lever for transmitting motion from said actuating lever to said valve body operating lever to move the valve body downwardly, the other of said bifurcations being engageable with said other end of said valve body operating lever for operating the latter reversely to move said valve body upwardly, and a valve element operating lever having one of its ends connected to said valve element and having the other of its ends normally in spaced relation to but in the operating path of said one of said bifurcations so as to be operable by said actuating lever with delayed action after movement of said valve body into engagement with the container.

8. A construction as set forth in claim 7 in which the valve element operating lever is fulcrumed at a point further from the end thereof connected to said valve element than from its other end, whereby quick opening of said valve element is effected.

9. In a container filling machine, a reservoir for flowable filling material having a bottom opening; a hollow filler valve body having a port for the passage of filling material from said reservoir to a container to be filled, and having an opening in its wall; a valve element movably mounted in said body for controlling said port; an apertured flexible closure secured to said body in sealing relation thereto and covering said opening; a valve operating member extending through said aperture and being secured to said closure in sealed relation thereto and movable with respect to said body by flexing of said closure, one end of said member projecting into said body for operating said valve element, and the other end of said valve operating member projecting outwardly from said body; and means cooperable with said other end of said member for operating said member and said valve.

10. In a container filling machine, a reservoir for flowable filling material having a bottom opening; a hollow filler valve body having a port for the passage of filling material from said reservoir to a container to be filled, and having an opening in its wall; a valve element movably mounted in said body for controlling said port; an apertured flexible closure secured to said body in sealing relation thereto and covering said opening; a lever extending through said aperture and having rigid, sealed connection to said closure whereby said lever is fulcrumed by said closure and enabled to rock by flexing of said closure, one end of said lever projecting into said body for operating said valve element and the other end of said lever projecting outwardly from said body; and means cooperable with said other end of said lever for rocking said lever and operating said valve.

11. A construction as set forth in claim 9 in which the closure is constituted by a flexible plastic plate, the valve operating member having sealing means clamped respectively against opposite faces of the plate at the opposite ends of the aperture therein for providing a fluid-tight connection between the valve operating member and the plate.

12. In a filler valve for container filling machines, a hollow valve body having a port for the passage of filling material to a container to be filled and having an opening in its wall; a valve element movably mounted in said body for controlling said port; an apertured flexible closure secured to said body in sealing relation thereto and covering said opening; and a valve operating member extending through said aperture and being secured to said closure in sealed relation thereto and movable with respect to said body by flexing of said closure, one end of said member projecting into said body for operating said valve element, and the other end of said member projecting outwardly from said body for cooperation with means for actuating said member and said valve element.

13. A construction as set forth in claim 12 in which the closure is constituted by a flexible plate, and in which the valve operating member is constituted by a lever having sealing means clamped respectively against opposite faces of the plate at the opposite ends of the aperture therein for providing a fluid-tight connection between the lever and the plate.

14. In a container filling machine, a reservoir for flowable filling material having a bottom opening; a support for holding a container under said opening; a filler valve body having an opening and being guided for vertical movements in alignment with a container on said support; a flexible wall secured respectively to the reservoir bottom at the walls of said opening and to said valve body so as to seal the opening between the walls thereof and said valve body and so as to mount said body for vertical movement from a normal position out of engagement with the container downwardly into sealing engagement with the container; a valve element carried by and movably mounted in sad valve body for controlling the flow of material from said reservoir through said valve body and thence into said container; an apertured flexible closure secured to said body in sealing relation thereto and covering said opening; a valve operating member extending through said aperture and being secured to said closure in sealed relation thereto and movable with respect to said body by flexing of said closure, one end of said member projecting into said body for operating said valve element, and the other end of said valve operating member projecting outwardly from said body; and means for first moving said valve body from normal position into sealing engagement with the container and then moving said valve element to open position comprising a common actuating member, a yieldable motion transmitting connection between said actuating member and said valve body, and a delayed action motion transmitting connection between said actuating member and said other end of said valve operating member.

15. In a filler valve assembly for container filling machines, a hollow valve body open at its top and having a bottom discharge port; a valve stem extending from within said valve body upwardly and projecting above the top of said body; a valve element carried by said stem and being cooperable with said port; a spring for urging said stem and valve downwardly to close said port; a guide on the top of said body and through

which said stem extends; a sleeve surrounding said stem snugly and being received snugly and guided in said guide, the lower end of said sleeve being disposed within said body; operating means extending from outside said body to the inside thereof, engaging the lower end of said sleeve, and being operable for lifting said sleeve, and detachable means above said guide for transmitting lifting of said sleeve to said valve stem for lifting the latter and said valve to open said port.

16. In a filler valve assembly for container filling machines, a cylindrical valve body proper; a lower end cap removably secured to said body proper and having a discharge port; a cylindrical insert interposed between the lower end of said body proper and the bottom of said end cap, and having a lower guide and a spring seat spaced from the bottom of said end cap; an upper end cap removably secured to said body; an upper guide on said upper end cap; a sleeve slidable in said upper guide; a valve stem slidable in said lower guide and extending through said sleeve; a valve element carried by said stem and being cooperable with said port; a compression spring interposed between said valve element and said spring seat; means projecting through said body proper and being operable for raising said sleeve against the urge of said spring; and means above the top of said sleeve for transmitting raising movement of said sleeve to said stem.

17. In a filler valve assembly for container filling machines, a cylindrical valve body proper; a lower end cap removably secured to said body proper and having a discharge port; a cylindrical

insert interposed between the lower end of said body proper and the bottom of said end cap, and having a lower guide and a spring seat spaced from the bottom of said end cap; an upper end cap removably secured to said body; an upper guide on said upper end cap; a sleeve slidable in said upper guide; a valve stem slidable in said lower guide and extending through and projecting upwardly beyond said sleeve; a valve element carried by said stem and being cooperable with said port; a compression spring interposed between said valve element and said spring seat; means projecting through said body proper and being operable for raising said sleeve against the urge of said spring; a circumferential groove in said stem above the upper end of said sleeve, and a bifurcated spring blade inserted in said groove and providing an abutment for transmitting raising thrust from said sleeve to said stem.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,046,715	Arnold	Dec. 10, 1912
1,438,483	Garrett	Dec. 12, 1922
1,965,246	Meyer	July 3, 1934
2,005,471	Pittaluga	June 18, 1935
2,166,528	Johannes	July 18, 1939
2,270,709	Pittaluga	Jan. 20, 1942
2 356,142	Ayars	Aug. 22, 1944