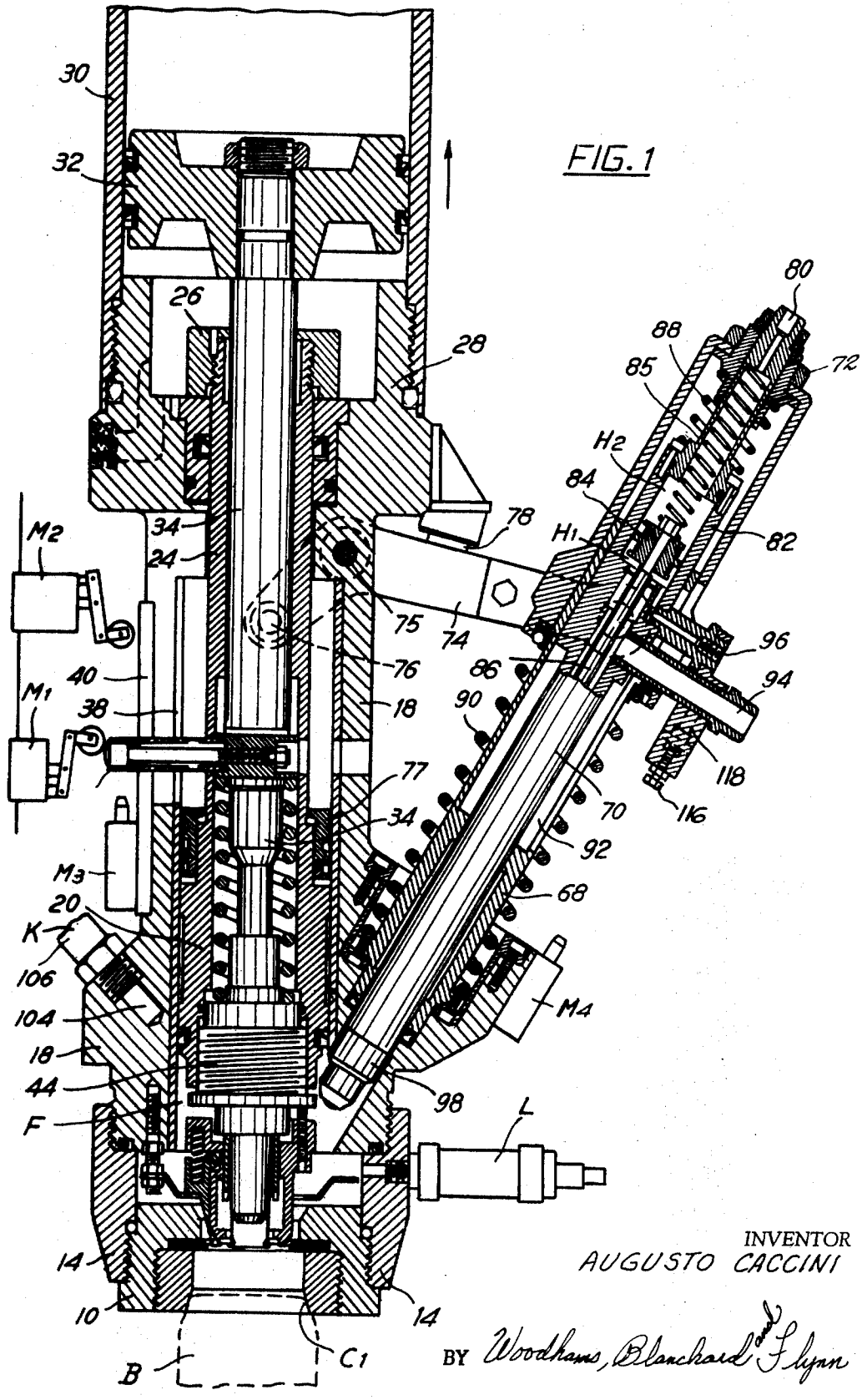
June 23, 1970 A. CACCINI 3,516,224

DEVICE FOR FILLING AND SEALING PRESSURE CONTAINERS
IN PARTICULAR AEROSOL-BOMBS

Filed Nov. 1, 1967 4 Sheets-Sheet 1

FIG. 1



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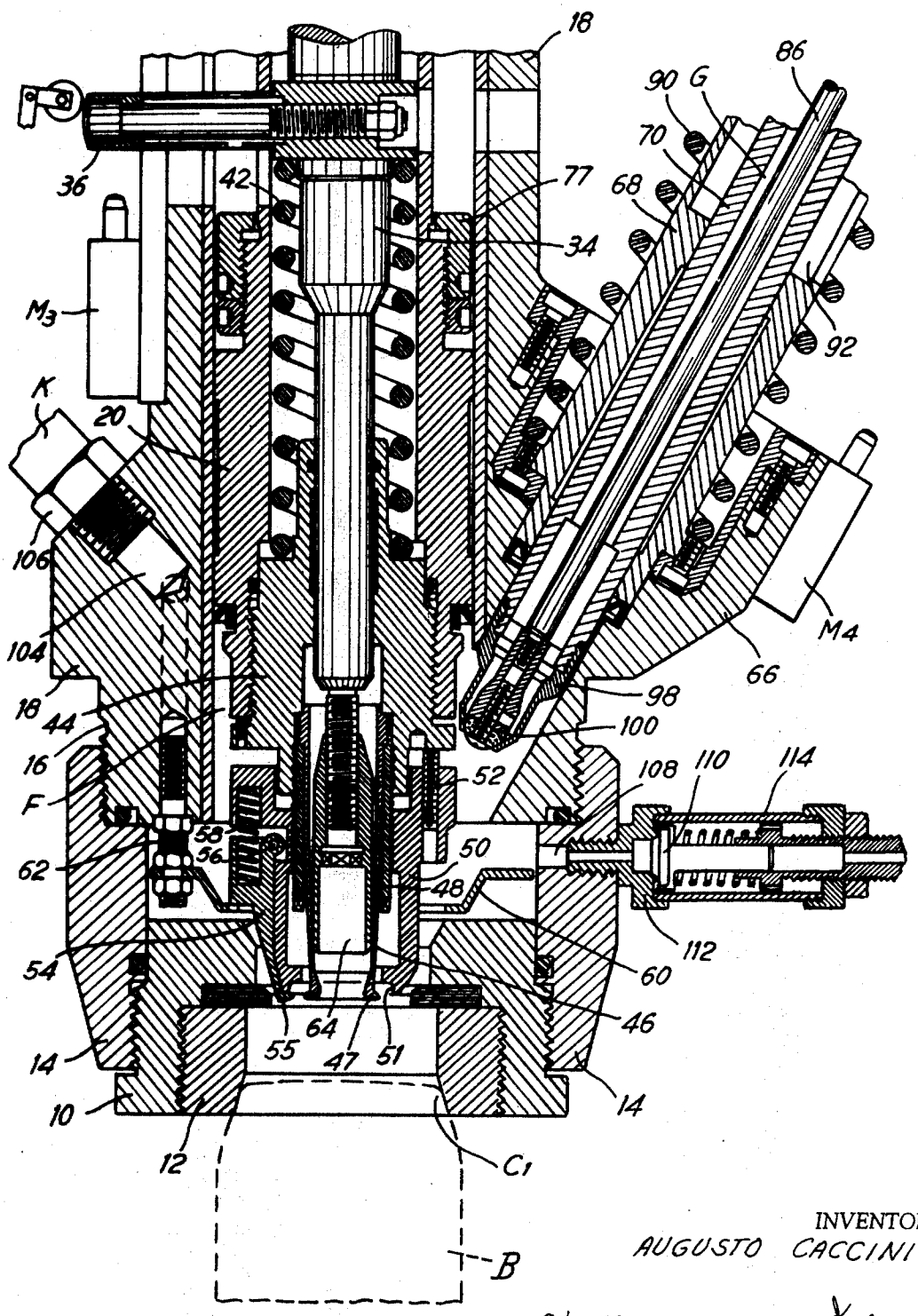
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DEVICE FOR FILLING AND SEALING PRESSURE CONTAINERS IN PARTICULAR AEROSOL-BOMBS

Filed Nov. 1, 1967 4 Sheets-Sheet 2

FIG. 2



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DEVICE FOR FILLING AND SEALING PRESSURE CONTAINERS IN PARTICULAR AEROSOL-BOMBS

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FIG. 3

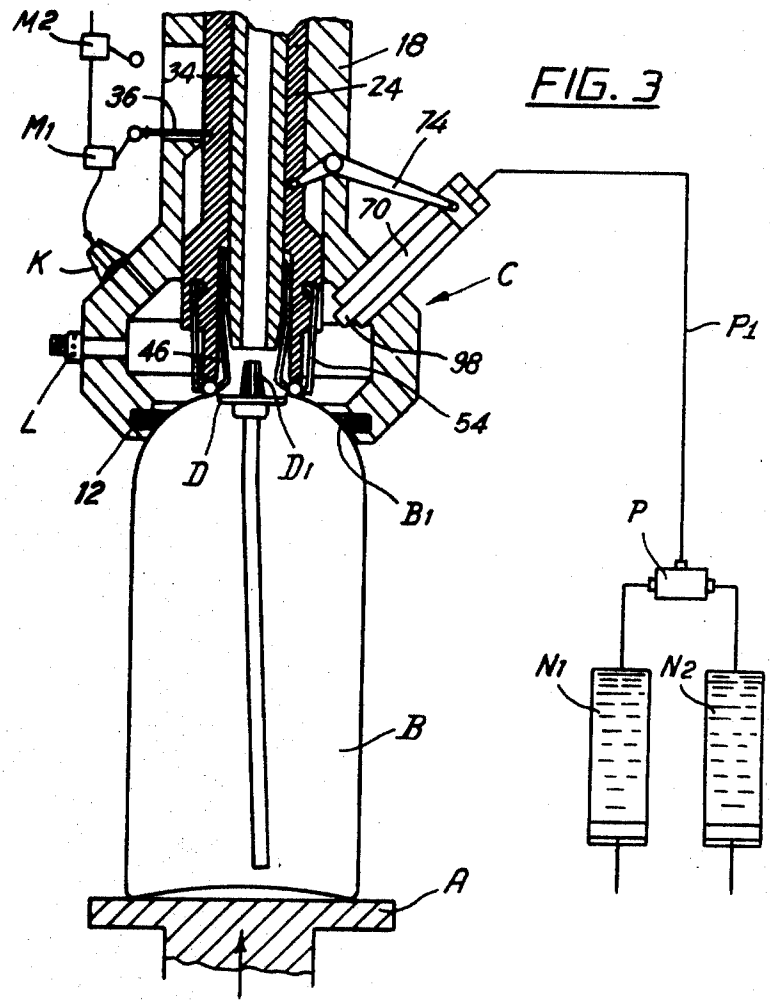
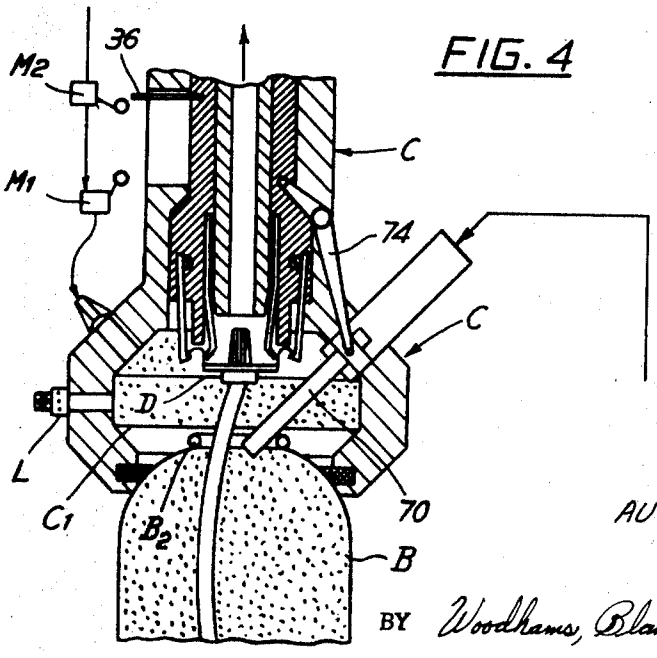


FIG. 4



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DEVICE FOR FILLING AND SEALING PRESSURE CONTAINERS IN PARTICULAR AEROSOL-BOMBS

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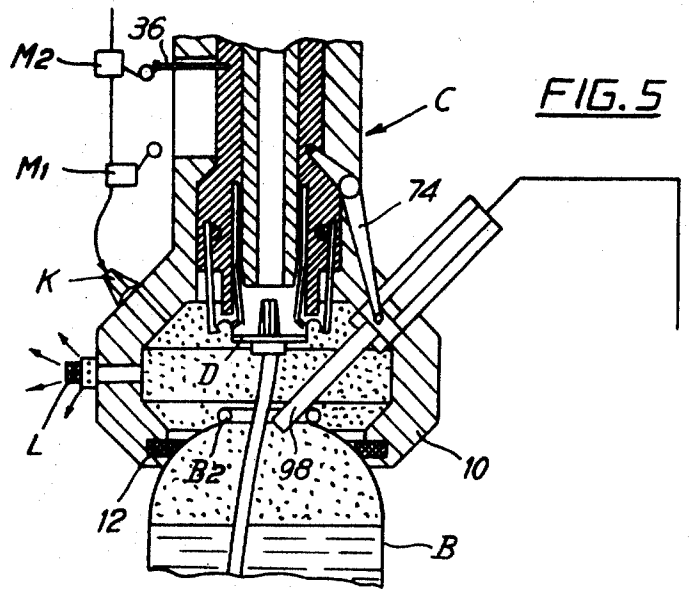


FIG. 5

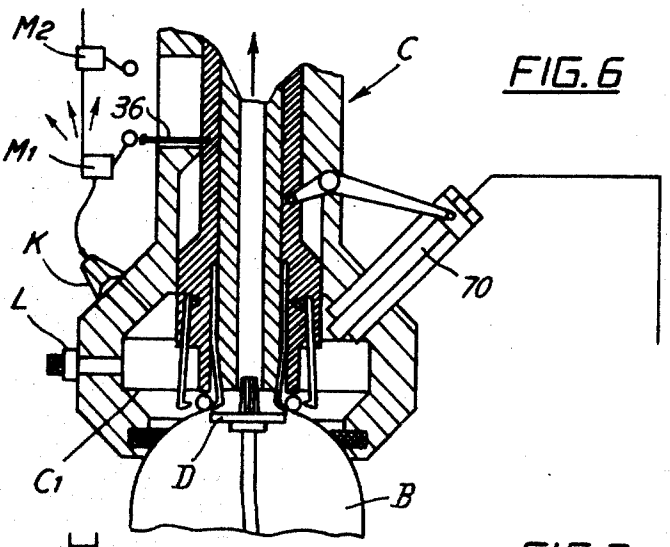


FIG. 6

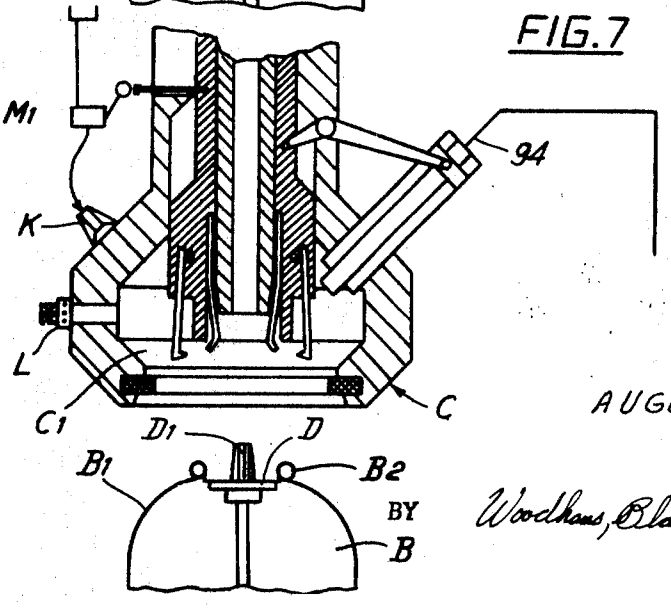


FIG. 7

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United States Patent Office 3,516,224
Patented June 23, 1970

3,516,224

DEVICE FOR FILLING AND SEALING PRESSURE CONTAINERS IN PARTICULAR AEROSOL-BOMBS

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Int. Cl. B65b 31/02
U.S. Cl. 53—112 13 Claims

ABSTRACT OF THE DISCLOSURE

The device comprises a chamber into which nozzles are leading, for an inert pressurized gas and for the propellant fluids, as well as for the fluid to distribute, said nozzles being actuated successively to introduce, into the container, first the inert gas and successively the propellant and the liquid to be pulverized.

This invention concerns a device for filling and sealing pressure containers for aerosols in general and bombs for aerosols in particular where an active product is added to a suitable evaporable liquid under ambient pressure and kept in the liquid state by adequate pressure.

Pressure containers in general, in particular those for aerosols, require special care for their filling and sealing, especially when these operations must be executed rapidly on a large number of containers. In practice it is necessary to use complex apparatuses of delicate functioning by which the containers are filled at first with a batch of the active product and subsequently with the propellant by means of a movable head provided with a pressure chamber.

This head must be able to achieve certain operations, for instance, to remove the lid together with the valve from the mouthpiece of the container so that the container may be filled with the propellant and must be able to reinsert and seal the lid at the mouthpiece of the vessel filled in that way by means of a flanging or clipping process.

This system of filling and others known of that kind, present substantial drawbacks which unfavourably affect the productive cycles, giving rise to losses of material which inevitably result in economic damages.

In particular and always at the end of each filling operation a certain residual quantity of propellant always remains and this is inevitably lost. Attempts to save the propellant at the beginning of the operation seem to be easily practicable, but are very troublesome in practice and cause further drawbacks which require the use of special apparatuses without improving the economic advantages.

It should not be overlooked that the introduction of the propellant in the pressure container must be executed according to certain criteria for avoiding splashes and projectiles which may damage the head and exterior of the container, especially if the latter is lithographed, because generally the solvent is very substantial.

The scope of this invention is to avoid the mentioned drawbacks and to consent the filling of the containers without giving rise to losses either of the active product or propellant and avoid, on the other hand the filling in of the foregoing gas, generally air, which may alter the active product.

Another aim of this invention is to make possible the simultaneous introduction of the active product and propellant into the pressure container so as to increase productivity and the output of the establishment which disposes of the device according to this invention.

A further object of the invention is that of realizing a device of the specified type apt to guarantee reliable functioning of simple realization and which might be applied with limited modifications and inserted into the usual lines for automatically filling and sealing pressure containers.

The device according to this invention, contemplating a head provided with a chamber in which is hermetically located the upper end with the mouthpiece of the container to be filled and comprising a spray nozzle for filling the container with the propellant and members for moving away and re-inserting such lid on the mouthpiece of the container and for sealing it, is characteried in that the head, provided with pressurizable chamber comprises at least two joint injector-nozzles, besides the relative shut off means, the first shut off means for the active product and/or propellant tank and the second one for a source of inert gas, preferably air, and for the pressure control means of said inert gas within the pressurizable chamber, in order to maintain said pressure at an adequate value and in order to avoid or to limit the vaporization of the propellant filled into the container, whereas the operating means forming part of the head, actuate with the adequate timing the shut off means which introduces into the container inert gas, the active product and the propellant and which connect said pressurizable chamber with the ambient, in order to discharge the inert gas from the latter after the filling of the vessel.

The invention also contemplates the procedure of filling pressure containers, like the usual aerosol bombs by means of the above described device. Such a procedure, which utilizes a head with a pressurizable chamber provided with nozzles to introduce the propellant into the container, is characterized in that it pressurizes the inside of the container and the overlying chamber with an inert gas preferably air at certain pressure which is higher or substantially equal as the tension of the vapour relative to the propellant used; by introducing the propellant and the active product to be pulverized into the vessel after the pressurization effected with inert gas, by sealing subsequently the filled container and in discharging the inert gas, which has been introduced before, from the chamber pressurizable by the head.

In order to avoid the remaining of inert gas in the vessel, filled before the sealing of the container, it is advisable to adequately reduce the pressure in the container itself in order to produce a controlled vaporization of a limited quantity of the propellant, the vapours of which expel from the vessel at least part of the inert gas previously introduced, whereas the container is subsequently closed and remaining inert gas discharged through the pressurizable chamber of the head.

The invention will now be explained by the following specification in conjunction with the attached drawings and which illustrate, by way of example, an advantageous form of realization of the device apt to be inserted into a line for filling and sealing bombs for atomization by means of adequate propellants of the desired materials. In the drawing:

FIG. 1 is an axial cross section of the device.

FIG. 2 is a detail of FIG. 1, on a larger scale.

FIGS. 3 to 7 are schematic views of the different operations effected by the device according ot the invention.

As already pointed out, the device illustrated is located in an adequate position in a line for filling and sealing pressure containers, such a line comprises, beside other things the points for filling the empty containers, for setting the lids and the mouthpiece of such containers, for sealing the filled containers and for loading the latter in the discharge position.

Considering FIGS. 1 to 7 of the attached drawings a platform A is actuaated by an adequate reciprocating

motor and is apt to receive one after the other, a container B or bomb to be filled, provided by lid D which is freely held by the mouthpiece B_2 of the container. Lid D is provided in a known manner by an intercepter-atomizer member D_1 actuated by the user.

Platform A is vertically movable by adequate synchronized means together with the members governing device C synchronized, in turn with other members of the apparatus.

Device C (see FIGS. 1 and 2) consists of a head **10** coaxial with platform A which is hollow so as to form a pressure chamber C_1 open in its lower part and provided with annular gaskets **12** of elastically resilient material. The border of said joint hermetically engages the bombed surface which terminates in the mouthpiece B_2 of the vessel B in order to seal thereby the pressure-chamber C_1 and join the latter with the inside of said vessel B.

A metal ring **14** secures head **10** removably at the lower end **16** of a tube **18** forming the body of device C, said end forming also a chamber F which is in communication with pressurization chamber C_1 which has been considered above.

The upper part of chamber F is closed by a piston **20** which tightly slides inside the tube **18**, the shaft **24** of which is tubular, of adequate length and has a stop ring **26** on its upper end which cooperates with the bottom **28** of a cylinder **30** which is solid and coaxial with the tube **18**.

A piston **32** is slideable in the cylinder **30**, and the shaft **34** of the piston is positioned inside the tubular shaft **24** and is provided on its side with a radial pin **36** which extends through longitudinal slots **38** and **40** (provided respectively in said tubular shaft **24** and in the tube **18**) in order to project outside and actuate complementary members of the device C.

A spring **42** is located between piston **20** and shaft **34**; the action of this spring as will be described infra, moves piston **20** and shaft **34** away from each other. The spring **42** is held in the lower part by a sleeve member **44** screwed to the lower end of piston **20** and in the upper part by the pin **36**. The lower part of sleeve member **44** is threaded so as to movably hold a tubular elastic grip **46**, the extreme lower end **47** of which is adequately formed so as to form a crown which engages the annular internal wall, presented by plug D.

Gripper **46** is secured to sleeve **44** by a threaded ring **48** screwed to said sleeve **44**, so that the same is coaxial to head **10**. On the threaded ring **48** there is also screwed a cap **50** the axial position of which may be adjusted by lock screws **52** which engage the border of sleeve **44**. Cap **50** is drilled and terminates in its lower end with an annular seat **51** so shaped as to house and urge the edge of plug D against the edge of mouthpiece B_2 of container B, whereas through the hole of cap **50** passes crown **47** presented in the lower part by gripper **46**. Cap **50** is provided toward its upper end with radial slots, in each one of which is housed a small hook **54** which ends in a formed lip **55**, the hook **54** being bolted to a pin **56** and influenced by a spring **58**, the action of which spring causes the said small hook to oscillate in a direction toward the axis of the device. In this way lips **55** may engage the edge of the plug in order to move latter away from the mouthpiece of container B in relation to what will be explained hereafter.

Toward their mid part the small hooks **54** are provided at their rear ends with projections which may engage the border of a ring **60** held adjustably, by threaded pins **62** at the extreme end of the tube **18**.

During the axial shifting which is effected between the ring **60** and the small hooks **54**, the latter are caused to spread apart so as to free plug D which is held by them.

An oval sliding body **64** is located in the hole of the tubular gripper **46** and is adjustably mounted on the

lower end of the shaft **34**. The formed surfaces of the oval-body **64** engaged with an internal crown at the end **47** of gripper **46** so as to spread these extreme ends radially apart from each other.

Tube **18** has fixedly secured thereto a head **66** which is conveniently inclined in respect to the axis of said tube and which holds a tubular body **68** extending upwardly which forms an axial guide for a tube **70** and which terminates in the upper part with a cap **72**. The tube **70** is operatably connected with one of the ends of a fork-lever **74** pivoted by a pin **75** to tube **18**.

The other end of lever **74** terminates in a fork the arms of which present two small coaxial pivots **76** which are separated from each other so as to permit passage of the punched stem **24** through them. The small pivots **76** engage an adjustable collar **77** which is more or less screwed at the summit of piston **20** so as to impart an oscillation in clockwise direction to lever **74** and move it away from a stopping plug **78** of elastic material, which plug **78** is secured to tube **18**.

The cap **72** holds a joint **80** which connects with the top chamber of a cylinder **82**, the piston **84** of which is urged by a spring **85** which maintains it pressed downwardly. Cylinder **82** is the prolongation of tube **70** inside of which is disposed slidably the shaft **86** of the previously mentioned piston **84**. A spring **88** is located between the bottom of cap **72** and the top of cylinder **82** so as to urge the latter along with tube **70** downwardly. Another spring **90** is inserted on tubular body **68** and its upper end acts to press the tube **70** upward and hold fork lever **74** against stopper **78**.

The tubular body **68** is provided toward its top end wits a horizontal slot **92** through which passes a joint **94** radially secured to the tube **70** and which communicates with an annular chamber G, formed inside said tube of shaft **86**.

A second joint **96** is presented on the upper part of tube **70** and connects with the lower chamber H_1 of cylinder **82** which has been previously considered while the other chamber H_2 of the cylinder connects with joint **80**.

The tube **70** terminates in its lower end with a spray nozzle **98**, provided with a sealing member **100** secured to shaft **86**, previously considered. This sealing member is urged against its seat by the action of the spring **85** on piston **84**.

Tube **18**, forming the body of the device, has in its lower part, a hole **104** which connects the previously mentioned chamber C_1, through a fitting **106** with a pneumatic valve K which controls the connection of said chamber C_1 either with the discharge (ambient) or with a source of air or inert gas, at adequate pressure in consideration of what will be illustrated hereafter.

Chamber C_1, by means of another hole **108** connects with the discharge through a pressure relief valve L, in which a shut off means **110** is urged against a seat **112** by a spring **114**.

The action of this spring can be regulated in such a manner as to permit connection with the discharge of chamber C_1 when the pressure in the latter chamber exceeds a certain pre-set limit. The device is integrated with control and positioning means in order to reset and synchronize the different parts of the device between themselves and the different parts of the apparatus on which said device is applied.

The resetting and synchronization means may be of the electrically, or liquid-pressure operated type and their actuation is effected by means of shut off devices.

In the illustrated case, the device is provided with pneumatic switches M_1, M_2 and M_3 all actuated by pin **36** and another switch M_4 actuated by an adjustable tappet **112** presented by a block **114** secured to tube **70**. Switches M_1 and M_2 govern the operation of pneumatic valve K, in the sense, that when the device is in the posi-

tion shown in the FIGS. 1 to 3 and 7, pressurizable chamber C_1 is connected by said valve K with the atmosphere.

On the other hand when the pin **36** actuates one switch M_2, said Chamber C_1 (closed by the container B under pressure) is made to communicate with the gas source (air). The switch M_3 by means of other pneumatic members not shown and embodied in the apparatus to which the device is applied, actuates valves for controlling the supply of cylinder-piston assemblies **30–32** and that which actuates platform A. The pressure switch M_4 on the other hand controls the air supply to cylinder-piston assembly **82–84**.

The operation of device C above described results from the following description which refers to the operative cycles actuated by said device and during which the filling and sealing of the containers B takes place. The filling operation is preceded by a conditioning operation by which a given pressure is established inside container B and in the overlying chamber C_1 and which pressure hampers (or at least limits) the evaporation of the propellant subsequently successively introduced into the container.

Container B to be filled is placed on platform A, provided with the closing lid D, which as already pointed out, in the beginning is freely applied on the mouthpiece B_2 in order to be removed.

The container thus prepared (see FIG. 3) and placed on platform A, is lifted by the latter and engaged with the upper part B_1 against the inner edge of the elastic gasket **12** thereby to close tightly chamber C_1 of said head **10**.

The lifting of the container B engages the outer edge of container lid D with the ends **55** of the small spring hooks **54** and these ends are spread apart in opposition to the action of springs **58** and successively closed for holding said lid D.

When platform A reaches the proper elevated position, a circuit is stabilized across the switch M_3 and other switches (not shown), which delivers pressed air into the lower chamber of cylinder **30**.

The piston **32** is thus lifted along with stem **34**, which, through pin **36** also lifts tubular shaft **24**, elastic gripper **46** and the hooks **54**; the latter, as already pointed out, hold lid D which is removed in this manner from the mouthpiece B_2 of the container B.

At first, the shaft **24** is freely lifted until the collar **77** of said shaft engages the small pins of lever **74**, to which lever is caused to oscillate clockwise during the final part of the lift shaft **24**. Tube **70**, with the related parts is caused to slide to the bottom (see FIGS. 4 and 5), so that injection nozzle **98** is introduced into the opening of container B without meeting any obstacle.

In case nozzle **98** meets obstacles on its path, these will be neutralized by the intervention of spring **88** which permits the displacement of tube **70** independently from tubular body **24**.

During the lifting of tubular stem **24** and extension of nozzle **98**, pin **36** actuates switch M_2, which actuates valve K, delivering the gas (i.e., air) into chamber C_1. This gas has a pressure suitable to condition and pressurize said chamber. Generally and taking into account this physical-chemical characteristics of the usual types of propellants, such as conditioning gas, air at an adequate pressure is employed. For example, in case "Freon 11" or "Freon 12" are used as propellants and considering the physical conditions of these latter gases, a pressure comprised between 1.5 and 6 atm. is formed in the chamber C_1 and F, i.e. such as to obviate or also to limit the evaporation of the propellant. For instance, supposing that the ambient temperature is normal (10°–20°) and that a mixture of "Freon 11 and Freon 12" is used, chambers F_1 and C_1 (and thence also of container B) are pressurized with air at 2.5 atm.

During these operations adequate batchers N_1 and N_2 will be actuated, the filling parts of which are connected to each other by means of a mixer P. These batchers effect the pre-dosing of the propellant and of the active product and the liquid mixture is conveyed by a flexible conduit P_1, to the connection **94** of the device and thence into chamber G of the injector **98** closed by the sealing means **100**. At the end of the pressurizing operations of chambers C_1 and F and of container B, the tappet **112** which is secured on the tube **70**, actuates switch M_4, which, by means of a valve (not shown) connects the joint **96** with the compressed air source. Therefore piston **84** is lifted against the action of the spring **85**, thereby moving the sealing member **100** away from its relevant seat in nozzle **98** and thus allowing the introduction of the mixture of propellant and active product into the container B without giving rise to stray droplets or scattering.

During this operation evaporation of the propellant is prevented inasmuch as it is always maintained in a liquid state by the inert gas under pressure present in chambers C_1 and F.

To obtain uniformity and regularity in the filling of different containers B and also in consideration of the fact that during injection of the propellant-active product mixture into the container B, the pressure increases in the pressurization chamber and in said container, operation of the pressure relief valve is foreseen. In view of the pre-regulation of the valve L, the latter discharges any excessive pressure which may occur in chambers C_1 and F following introduction of the liquid mixture into container B.

Once the filling of the container B is completed a pressure switch (not shown) switches the feeding circuit of cylinder **82**, connecting the fitting **96** with the discharge and fitting **80** with the compressed air supply source so as to close the connection between chamber G and the filled container B. After this, also the feeding of the chambers relative to cylinder **30** is switched in order to connect the lower chamber with the discharge and the upper chamber with the compressed air source so as to lower the piston **32**.

The shafts **24** and **34** are lowered (see FIG. 6) so that nozzle **98** will recede, in such a way, that the closing lid D will be readjusted on the mouthpiece B_2 of the container. During this operation and shortly before lid D is put on the mouthpiece of the container, the pressure existing in the chambers C_1 and F is limited, that is, slightly reduced, and therefore also inside the filled container B, in order to produce a limited and controlled evaporation of the propellant introduced in container B. This controlled evaporation is effected for the purpose of expelling from the container B that part of the inert gas which remains in the upper part of said container and is actuated, for example, by means of suitable timing which conveniently actuate the shutoff valve K through switch M_2 in order to discharge from the chambers C_1 and F a part of the inert gas for evaporating part of the propellant present in the container B, and the vapours of which, being heavier that the inert gas, expel the latter from the container.

After this operation follows the sealing of container B. In the case illustrated, the downward displacement of the shafts **24** and **34** and therefore of the cap **50**, causes the engagement of the cavity **51** in the lower part of the latter, with the edge of the lid D, which is thus engaged with the sloped border of mouthpiece B_2 of container B (see FIG. 6). The downward displacement of stem **34** engages the oval-body **64** with the inner end of the tubular grip **46**, so that the shaped ends **47** are radially enlarged so as to anchor the lid by gripping the annular wall of the lid D at the mouthpiece B_2 of the container and thus to hermetically close said container. The lowering of shaft **34** actuates switch M_3 which actuates in turn the distributor-valve in order to discharge the pressure from the upper chamber of the cylinder **30**; the action of spring **42** lifts shaft **34** which disengages the body **64** from the extreme ends **47** of tubular grip **46**, freeing the latter from the lid D which is pressed to the container B.

When the cap **50** is shifted downwardly to press the lid D against the border B_2 of the container, it engages the ledges in the rear of the small hooks **54** with the ring **60** in order to enlarge these small hooks, thus disengaging the lips **55** of the latter from the border of said lid. This disengagement is maintained until completion of the sealing operation of container B in order to enable the removal of the filled container from the device during the subsequent lowering of the platform A (see FIG. 7).

After the closing of the container, valve K is actuated by means of switch M_1 to discharge from chambers C_1 and F the gas of pressurization previously introduced which may be recovered, if necessary.

Successively platform **1** is actuated in order to replace it into the initial position together with the filled sealed container. The device is thus ready for starting another cycle for filling and automatically sealing another container.

The advantages permitted by the device according to this invention and its relative operating cycle are evident and besides avoiding the indicated drawbacks they permit to effect very quickly the automatic refilling of containers in one single operation which is in perfect accord with the art. Moreover the invention avoids losses of propellant and of active products which soil the mouthpiece of the container damaging the seal and perhaps the coating of the container itself, for instance the lithographic coating or similar. In particular the loss of propellant is avoided which is always the case in the known systems of sealing, even when the volume of chambers C_1 and F is limited.

Modifications and variations there might be applied on this device according to the invention in order to adapt it to the different requirements in working, also if for instance and with little advantage the device might be provided with two injection nozzles **98** for introducing the propellant and the active material by means of separate tubes into the container. Obviously the driving of these nozzles has to be executed in proper sequence in order to comply with filling conditions of the container.

It is understood that the present projection is also extended to the operative cycle of the operation effected by the device, by means of which the containers B are pressurized, filled and sealed, this protection also considers the apparatus incorporating one or more of these devices.

The details of the actuation and of the realization may however vary without departing from the sphere of the invention and therefore the range of same.

What is claimed is:

1. A device for filling and sealing pressurized containers, particularly aerosol containers, comprising:

head means defining a chamber therein with said head means having an opening in communication with the chamber, the opening being adapted to have a portion of a container positioned adjacent thereto in sealing relationship with the head means for closing the chamber;

lid control means movably mounted on said head means for removing a lid from the container and for replacing the lid on the container in sealed relationship therewith;

first supply means including first nozzle means for supplying a liquefied propellant to said container to at least partially fill same when the container is positioned adjacent the head means;

second supply means including second nozzle means in communication with said chamber for supplying a pressurized gas to said chamber for pressurizing same to at least limit evaporation of the propellant introduced into the container, said gas being relatively inert with respect to the propellant delivered to the container; and

control means coacting with said first and second supply means for controlling the flow through said first and second nozzles, respectively.

2. A device according to claim **1**, in which the control means causes said gas to be supplied through said second nozzle means into said chamber for pressurizing same prior to the flow of propellant through said first nozzle means.

3. A device according to claim **1**, further including pressure release valve means in communication with said chamber and sensitive to the pressure of gas within said chamber for maintaining a substantially constant pressure within said chamber as said container is being supplied with propellant.

4. A device according to claim **1**, further including platform means for holding a container thereon and means mounting said platform means for movement relative to said head means for causing the container on said platform means to be moved into engagement with said head means so that the interior of said container is in communication with said chamber:

said lid control means including a member movably mounted on said head means for removing the lid from an empty container and for subsequently pressing and fixing said lid onto the mouthpiece of the container after the container has been filled;

said second nozzle means including an element movably mounted on said head means and having an injector nozzle mounted thereon and positioned so as to be aligned with the opening in said container, and said second supply means including shut off valve means cooperating with said second nozzle means for controlling flow therethrough; and

transmission means interconnecting said movable member and said movable element for causing said movable member to grip the lid and lift same from the container and for then causing the movable element to move the injector nozzle into the container so as to fill same.

5. A device according to claim **1**, in which the second supply means includes mixing means for mixing propellant with an active product with said mixture of propellant and active product then being supplied through said second nozzle means to said container.

6. A device according to claim **1**, in which the lid control means includes a tubular gripper member having a plurality of expansible spring-like fingers adjacent the lower end thereof and a cap fixed to and surrounding the gripper member with the cap having a shaped cavity in a lower end thereof for engagement with the border of the lid so as to urge the lid against the mouthpiece of the container:

said lid control means further including stem means slideably mounted on said head means and coaxially positioned within said tubular gripper member, said stem means having an expansion member on the lower end thereof engageable with said spring-like fingers for causing expansion thereof for causing said lid to be moved into sealed engagement with the mouth of the container; and

said lid control means further including spring means coacting between said tubular gripper member and said stem means for relatively urging same in opposite axial directions, and motor means connected to one of said stem means and gripper member for causing alternating linear movement thereof.

7. A device according to claim **6**, in which said gripper member is fixedly connected to a tubular member with said tubular member being slideably mounted on said head means, said tubular member further including lid lifting members mounted thereon and engageable with a lid positioned on an empty tubular container for lifting the lid away from the container to permit filling thereof:

said second nozzle means including a nozzle movably mounted on said head means and being movable between a first retracted position and a second extended position wherein the head of said nozzle is positioned substantially within the empty container; and

lever means connected between said tubular member and said nozzle member for causing simultaneous movement of said nozzle member from said first to said second position whenever said lid lifting members engage said lid and said tubular member moves said lid away from said container.

8. A device according to claim 7, in which the nozzle of said second nozzle means includes a nozzle housing movably mounted on the head means and a nozzle head member movably mounted on the nozzle housing and defining a storage space therebetween, the nozzle head means being in sealing engagement with the nozzle housing in one relative axial position therebetween, and alternating fluid pressure motor means connected to the nozzle head member for causing same to move relative to the nozzle housing for permitting propellant to be supplied from said storage space to said container.

9. A device according to claim 6, in which the second nozzle means includes an injection nozzle member slidably guided within a tubular body secured to the side of the head means, the tubular body being inclined with respect to the tubular gripper member so that the axes of the tubular gripper member and the tubular body substantially intersect opposite the opening into the container, spring means coacting with said injection nozzle member for urging same in a direction away from the container, and fluid pressure cylinder means connected to said nozzle member for urging same in a direction toward said container.

10. A device according to claim 6, in which said lid control means includes a plurality of movable hooks mounted on said cap and having hooked portions formed on the lower ends thereof for engaging the border of the lid for moving same away from the empty container, resilient means coacting with the hooks for urging same into a position so as to engage the lid, and stop means coacting with said hooks for moving same in opposition to said resilient means for causing said hook portions to disengage said lid when said lid is moved downwardly into a position adjacent the mouthpiece of the container after the container has been filled.

11. A device according to claim 1, wherein said lid control means includes a first reciprocating member slideably mounted on said head means and having movable hook members thereon engageable with the lid of a container for moving same away from the container, said first slidable member including a gripping sleeve having expansible fingers adjacent the lower end thereof, said fingers being positioned adjacent to and inwardly of said hook portions for engaging said lid and causing same to be pressed into sealing engagement with said container after the lid is repositioned on the filled container:

said lid control means further including a second reciprocating member slideably mounted on said head means and also slideable relative to said first reciprocating member, and means for permitting relative axial movement between first and second reciprocating members;

said second reciprocating member including means coacting with said spring-like fingers for causing same to move outwardly to engage the lid when the lid and the slideable members have been moved downwardly to reposition the lid on the filled container; and

reciprocating fluid pressure motor means connected to one of said reciprocating members for causing reciprocation thereof.

12. A device according to claim 1, wherein said second nozzle means includes a movable tubular member and an elongated plunger member postioned within the tubular member and being spaced therefrom to define a compartment therebetween, said plunger member having a head on the end thereof positioned in sealing engagement with a portion of said tubular member when in one relative axial position;

said second supply means including conduit means connected to said compartment for supplying a predetermined quantity of propellant thereto;

drive means connected to said tubular member for causing said tubular member and said plunger member to synchronously move so as to position same substantially adjacent the open mouth of the container; and

motor means coacting between said tubular member and said plunger member for causing relative axial movement therebetween for permitting said propellant within said compartment to flow thereform into said container.

13. A device according to claim 1, wherein said second supply means supplies gas to said chamber and maintains a predetermined, substantially constant pressure within said chamber during the filling of said container, and further including means for partially reducing the pressure of the gas within said chamber after the container has been filled but before the lid has been positioned thereon so as to cause a limited and controlled evaporation of the propellant within the container whereby the gas is expelled from the container.

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