July 2, 1968 G. N. HEROPOULOS 3,390,817

AEROSOL HOLDER WITH DOOR OPERATED VALVE ACTUATOR

Filed Jan. 20, 1967

FIG. 1.

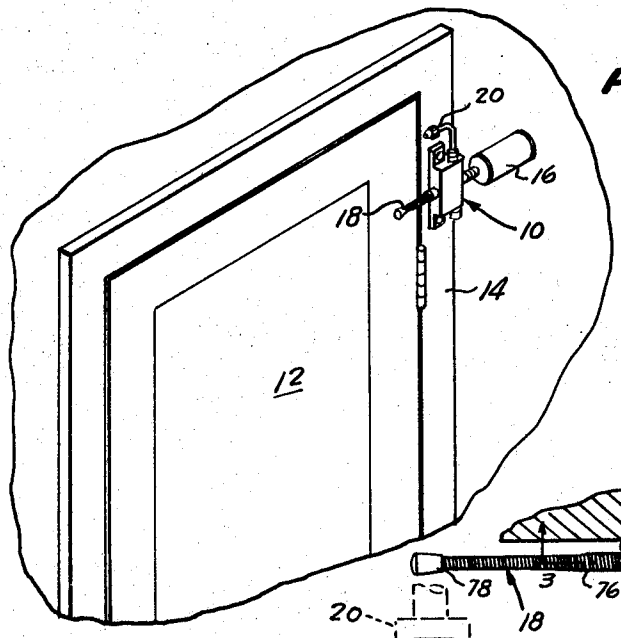


FIG. 2.

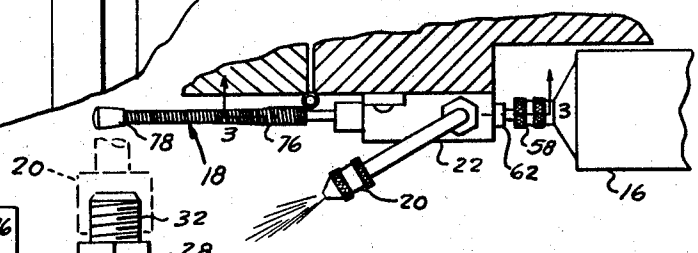


FIG. 3.

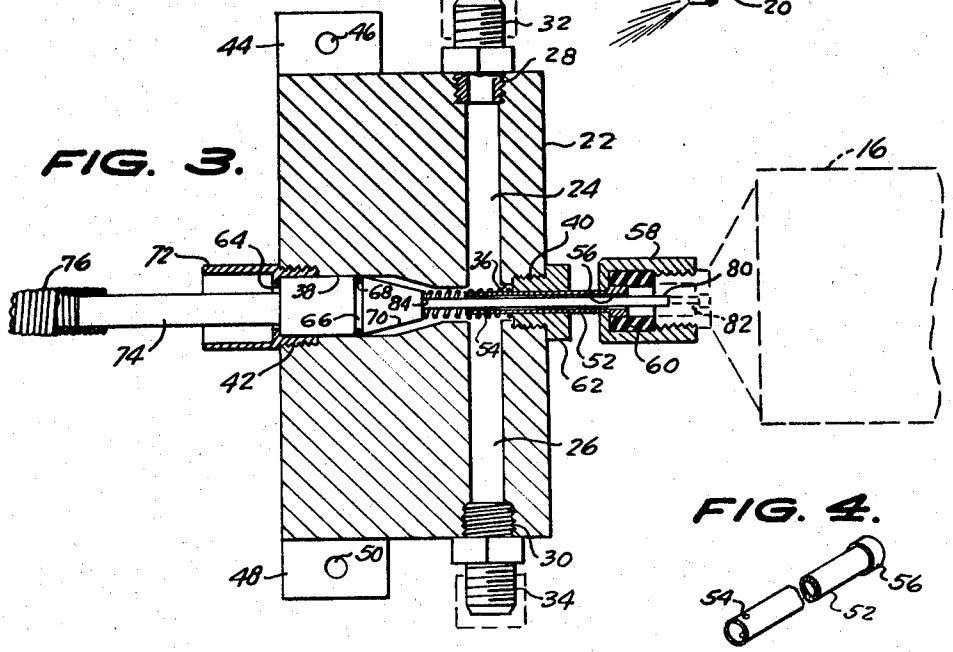


FIG. 4.

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AEROSOL HOLDER WITH DOOR OPERATED VALVE ACTUATOR

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ABSTRACT OF THE DISCLOSURE

A body secured adjacent an edge of a hingeably mounted door having an inlet passage and means communicating therewith for securing an aerosol insecticide container to the body in communication with the inlet passage, an outlet passage and means secured thereto for dispersing a fluid and a resilient door engaging means secured to an actuator for being engaged by the door when the door is opened and opening the valve of an aerosol bomb to spray insecticide adjacent the door is disclosed.

Background of the invention

Field of the invention.—This invention relates to valve actuators and more particularly to actuators for operation automatically upon engagement by a door.

Description of the prior art.—Plunger operated valves are well known in the art; however, valves especially adapted for being engaged by a hingeably mounted door for automatically opening the valve have not been found useful for dispersing the contents of an aerosol bomb in the space adjacent the door heretofore. Numerous valves are shown in the prior art constructed and arranged for inclusion in conduit systems of comparatively complex construction. Valves which are specially constructed for being operated by the opening of a door and for securing an aerosol container adjacent the door are, to my knowledge, not known in the prior art.

Summary

The present invention relates to a door and valve actuator combination in which a body is secured to the facing adjacent the door, an aerosol container is secured in communication with a passage in the body, means for dispersing the contents of the aerosol container to the space adjacent the door and means received in the body for being operated by the opening of the door for opening the aerosol valve to permit dispersion of the fluid therein.

A novel aerosol holder and valve actuator forms the subject of this invention which includes the following features, of which are objects of the invention:

A holder body having inlet and outlet passages, means for detachably securing an aerosol container in communication with the inlet passage and means for securing fluid dispersing means to the outlet passage and actuator means in the body for engaging and opening the aerosol valve when a door is opened;

A holder including a body having inlet and outlet passages therethrough, means for detachably securing an aerosol container in communication with the inlet passage and means for dispersing the contents of the aerosol container secured to the outlet passage and a plunger slidably received in a passage in the body for engaging and opening the aerosol valve upon being engaged by a door when said door is opened; and

A resilient door engaging member which lies in a plane substantially parallel to the plane of the door when closed for being engaged by the door for actuating a valve to disperse the contents of an aerosol bomb into the space adjacent the door.

The specific construction and arrangement of parts constitutes a further object of the invention.

Brief description of the drawing

FIGURE 1 is a view in perspective showing the overall combination including the door, the door facing, the holder body, the aerosol container and the valve actuator assembly.

FIGURE 2 is a top view of the aerosol and the combination of this invention showing the door and the door facing in cross-section looking downwardly as in FIGURE 1.

FIGURE 3 is a view in cross-section of the combination of this invention taken substantially along lines 3—3 in the direction of the arrows as shown in FIGURE 2.

FIGURE 4 is a perspective view in detail of the inlet tube of FIGURE 3 shown in perspective.

Description of the preferred embodiment

This invention comprises, in combination, a door **12** which preferably is mounted hingeably in a frame which includes a facing **14** adjacent a side of the door **12**. An aerosol container **16** is hingeably mounted to holder body **10** which includes a resilient actuator **18** which will be described in greater detail hereinafter. A fluid dispersing nozzle **20** is secured to an outlet passage in the body **10**.

Referring with particularity to FIGURES 2 and 3, the device of this invention comprises a body **22** which has therein an outlet passage **24** and a second outlet passage **26**, if desired. Preferably, the ends of outlet passages **24** and **26** are threaded at **28** and **30**, respectively, for threadably receiving coupling half unions **32** and **24** or another convenient fitting as desired. As shown in FIGURE 3, dispersing nozzle **20** may conveniently be secured to fitting **32** and arranged as shown in FIGURES 1 and 2. Body **22** also includes an inlet passage **36** and an additional passage **38**, the function of which will be described hereinafter. Inlet passage **36** is preferably threaded at **40** and the additional passage **38** is preferably threaded at **42** for threadably receiving fittings as will be described.

In a preferred form, the body also includes a pair of brackets **44** which includes an aperture **46**, and **48**, which includes an aperture **50**, for providing convenient means to secure the body to the facing adjacent the door.

As shown best in FIGURES 3 and 4, an inlet tube or conduit **52** extends into inlet passage **36**, and is provided at one end with outlet relief ports **54** and at the other end with a flanged gasket holder **56**. A threaded sleeve **58** is received on the exterior end of conduit **52** and a resilient gasket **60** is secured in threaded sleeve **68**, preferably annularly between the flange **56** and the wall of fitting **58**. A fitting or adaptor **62** fixedly secures the conduit **52** in position extending inwardly through the inlet passage **36**, as shown in FIGURE 3.

As also shown in FIGURE 3, the means for opening the aerosol container **16** comprises an actuator which includes a plunger **64** which is slidably received in the additional passage **38**. Plunger **64** is provided with a groove **66** for receiving an O-ring **68** which coacts between groove **66** and the walls of passage **38** to form a seal therebetween. The interior end of the plunger is tapered as shown at **70** for selectively comating with a complementarily tapered interior portion of passage **38**. A plunger guide and keeper **72** is threadably received in the threaded end **42** of the additional passage **38**. The keeper **72** is provided with a ring flange which engages the exterior end of plunger **64** to limit the outward movement of the plunger in the holder body.

A rigid actuator rod **74** is secured to the exterior end of plunger **64**.

A highly important feature of the present invention is the provision of a resilient door engaging means **18** which includes an elongate resilient member **76** which is sub-

stantially coaxial with plunger **64** and a resilient tip **78** secured on the distal end of the resilient elongate member **76**. As shown in FIGURE 1, and in FIGURE 2, the resilient door engaging means **18** lies in a plane which is substantially parallel to the door in its closed position and is engaged by the door when the door is opened and moves when the door is opened to move the plunger inwardly in the passage **38** in valve body **22**. A rigid elongate member **80** is secured to the other end, the interior end, of plunger **64** and is specially constructed and arranged for engaging a valve **82** which is conventionally provided in aerosol containers such as aerosol container **16**. When the door **12** engages the tip member **78** and the resilient elongate member **76** and moves the plunger **64** inwardly in passage **38**, the rigid elongate member **80**, which is, in the preferred embodiment, coaxial with the plunger and with the opening of the aerosol container, engages the valve **82** of the aerosol container and thereby opens the valve **82** to permit escape of the contents of the aerosol container. The plunger **64** may be resiliently biased outwardly in passage **38** by a spring **84** to maintain the plunger in the position wherein the valve is closed normally.

Operation

In operation, each time door **12** is swung open it engages the resilient actuating means **18** which, acting through rod **74**, moves plunger **64** inwardly in passage **38** which in turn moves the rigid elongate means **80** toward the valve **82** of the aerosol container **16**, thereby opening the valve **82** to permit the fluid to flow from aerosol container **16**, through conduit **52** and consequently through inlet passage **36**, through ports **54** and through outlet passages **24** and **26**, if two passages are provided. The fluid is then dispersed through dispersing nozzle **20** which is secured by means of fitting **32** in communication with passage **24**. An additional dispersing means or conduit carrying the fluid to a desired location, such as a light or the like, may be secured to fitting **34** in the manner described with respect to dispersing means **20**.

It will be seen from the foregoing that a novel and highly useful valve system has been provided which is especially adapted and constructed for automatically dispersing the contents of an aerosol bomb in the vicinity of a door each time the door opens. The invention has particular utility as a means for dispersing an insecticide in the space adjacent the door each time it is opened. The device is particularly valuably used around the barns, dairies, industrial establishments and the like where cleanliness and freedom from insects is of great importance. The invention is not limited to these applications, however, and may be used around dwelling houses, business establishments and the like. In addition to dispersing insecticides, which constitutes the primary utility of the invention, the invention may be used to disperse deodorants, perfumes and the like around the doors of residential buildings and business and industrial establishments. For example, the device may be used to disperse a deodorant into a bathroom each time the door is opened, as when a person enters and when a person leaves. Thus it will be seen that an invention of great practical utility has been described.

While the invention has been described, abstracted, and summarized in very specific terms to aid in the ready understanding of the invention and to comply with the disclosure provisions of the patent statutes it will be realized that while a single preferred embodiment has been described the scope of the invention is intended to be limited only by the appended claims and that the disclosure and the drawings are intended merely as exemplary of the invention and not in a limiting sense.

I claim:

1. In combination:
a door hingeably mounted in a frame;
a facing adjacent a side of the door;

a body secured to the facing, said body having communicating inlet and outlet passages therein;
means securing an aerosol container having an openable valve therein in communication with the inlet passage;
means secured in communication with the outlet passage for dispersing mixed fluids; and
means received in the body, including an extension portion which extends beyond the edge of the door for being engaged by the door when said door is opened, for opening the aerosol container valve to thereby direct a stream of fluid from the aerosol container through the inlet and outlet passages and the dispersing means to the space proximate the door each time the door is opened.

2. The invention of claim **1**, wherein:
the means for opening the aerosol container valve comprises
a plunger slidably received in the body,
means on one end of the plunger for engaging the aerosol container valve, and
resilient door engaging means on the other end of the plunger extending substantially parallel to the door for moving the plunger when the door is opened to engage the door to open the aerosol container valve each time the door is opened.

3. The invention of claim **2** wherein:
the body further includes a second outlet passage;
the aerosol container and the aerosol container valve opening means are substantially along an axial line on opposite sides of the body; and further comprising
means in the body resiliently biasing the means for opening the aerosol container valve toward the position wherein the aerosol container valve is closed.

4. A fluid valve operator for securement to an aerosol container for being engaged by a door when said door is opened to thereby open the valve of said aerosol container to direct a stream of fluid into the space adjacent said door which comprises, in combination:
a body having cmomunicating inlet and outlet passages, said body being constructed and adapted for being secured adjacent a door;
means for detachably securing an aerosol container to the body in communication with the inlet passage therein;
means for securing a fluid dispersing means to the body in communication with the outlet passage; and
actuator means received in the body for engaging the aerosol container, said actuator means being constructed and arranged in said body and disposed adjacent said door for being engaged by said door when said door is opened to be moved thereby to thereby engage the aerosol valve to open said aerosol valve and thereby direct a stream of fluid from said aerosol container through the inlet and outlet passages to the fluid dispersing means to thereby direct a fluid stream into the space adjacent the door each time said door is opened.

5. The fluid valve operator of claim **4** wherein:
the actuator means comprises
resilient door engaging means extending away from the body substantially parallel to the door for being engaged thereby when said door is opened.

6. The fluid valve operator of claim **4** wherein the actuator means comprises:
a plunger slidably received in an additional passage in the body, said additional passage being in communication with the inlet passage, for reciprocable movement therein;
resilient door engaging means secured at the exterior end of the plunger extending substantially parallel to the door for being engaged thereby when said door is opened; and

rigid elongate means secured at the other end of the plunger extending into said inlet passage for engaging the aerosol valve to open said aerosol valve when the door engages the resilient door engaging means.

7. The fluid valve operator of claim **6** further comprising:

spring biasing means in the body for resiliently biasing the plunger away from engagement with the aerosol container valve.

8. The fluid valve operator of claim **7** further comprising:

a pair of mounting brackets on the body for mounting the body to a door facing adjacent said door.

9. The fluid valve operator of claim **6** wherein the means for detachably securing the aerosol container to the body comprises:

an elongate tubular member extending into the inlet passage;

means securing the tubular member in the inlet passage; and

means received on the exterior end of the tubular member for threadably engaging and securing an aerosol container.

10. The fluid valve operator of claim **6** wherein:

the resilient door engaging means is substantially linear and has an axis;

the plunger is substantially linear and has an axis;

the means for detachably securing the aerosol container is substantially linear and has an axis; and

the resilient door engaging means, the plunger, and the means for detachably securing the aerosol container are substantially coaxially disposed, said plunger extending through said valve body at a distance on each side thereof.

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