United States Patent [19]

Fegley et al.

[11] **3,929,259**

[45] **Dec. 30, 1975**

[54] **CHEMICAL DISPENSING ANTI-BURGLAR DEVICE**

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[22] Filed: **June 4, 1974**

[21] Appl. No.: **476,314**

[52] **U.S. Cl.** **222/61;** 116/86; 222/82; 222/162; 222/325

[51] **Int. Cl.²** **B67D 5/08**

[58] **Field of Search** ..... 42/1 G; 116/65, 75, 86, 116/139, 142; 222/3, 5, 52, 61, 79, 81–83, 160, 162, 389, 180, 182, 183, 325–326, 319, 320–324

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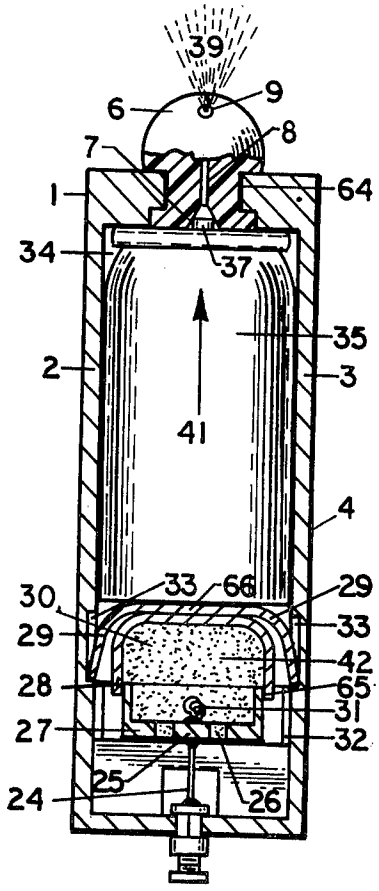
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Primary Examiner—Robert B. Reeves
Assistant Examiner—H. Grant Skaggs, Jr.

[57] **ABSTRACT**

A chemical dispensing anti-burglar device is disclosed in which a chemical such as tear gas is discharged into the area to be protected when an intruder opens a window or a door or forces open a window or a door to enter a private or unauthorized area with which the device is associated. The anti-burglar device employs an expandable cartridge for moving a reciprocal member which will discharge a chemical from a pressurized container. An improved means for releasing a chemical from a pressurized container is described.

6 Claims, 46 Drawing Figures



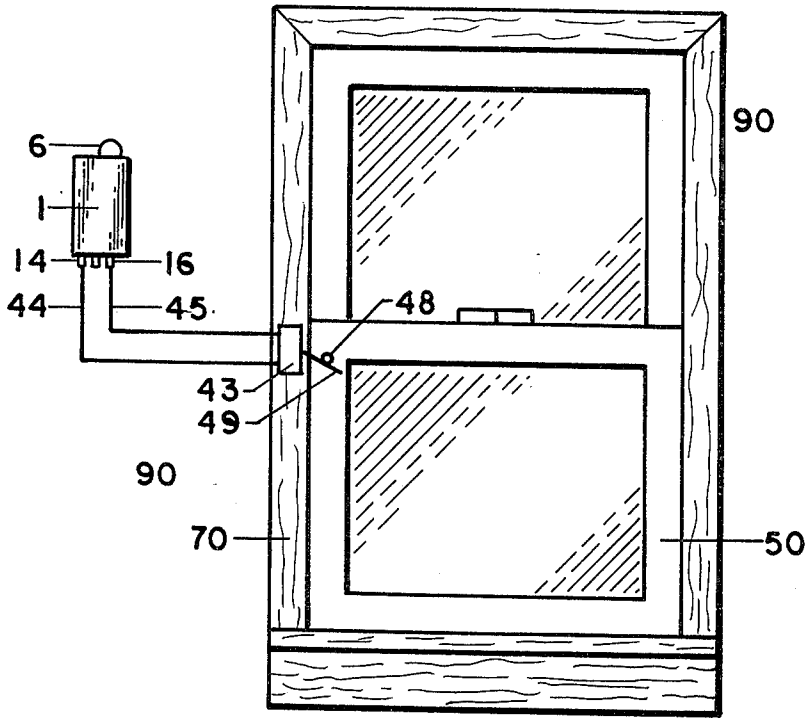


FIGURE 1

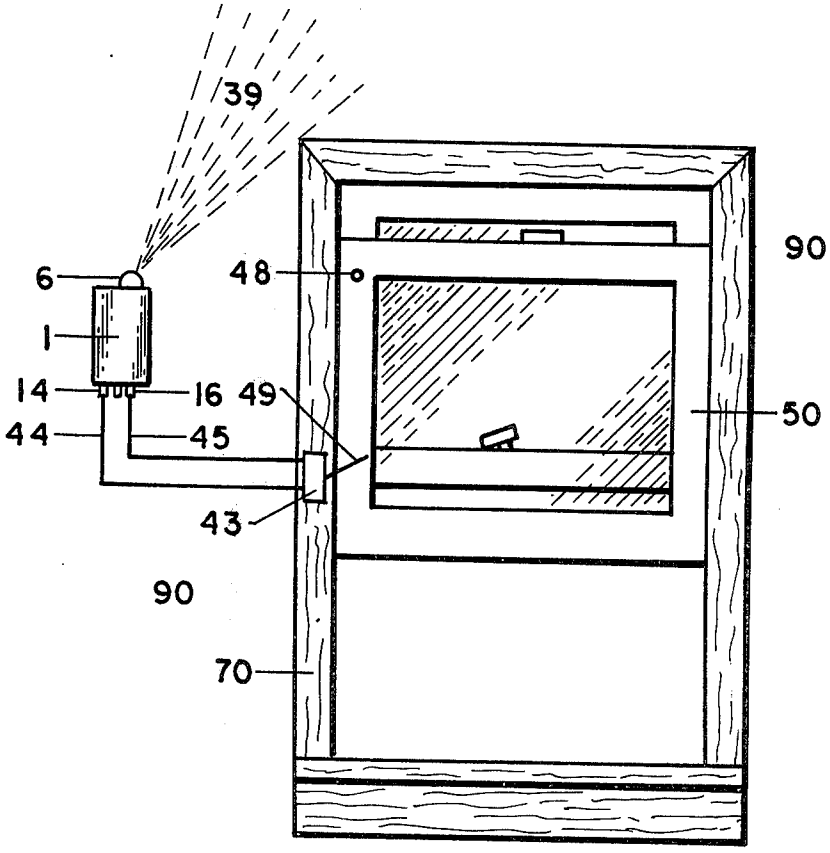


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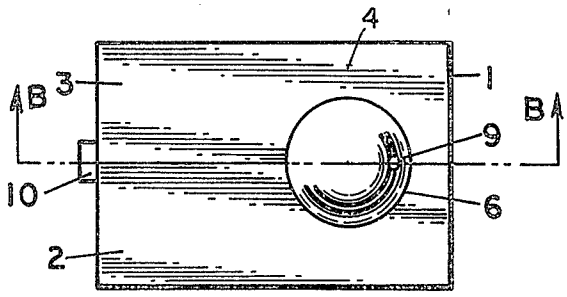


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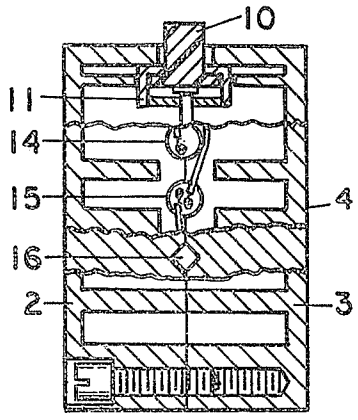


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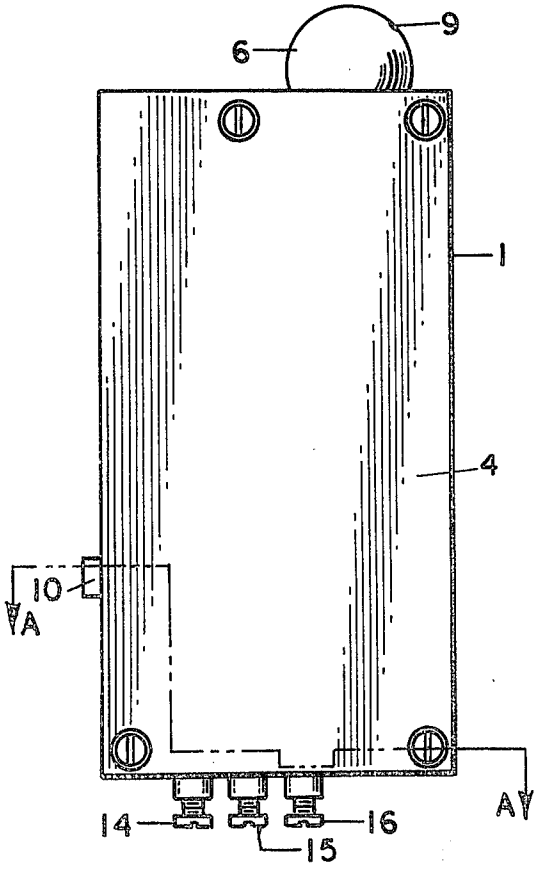


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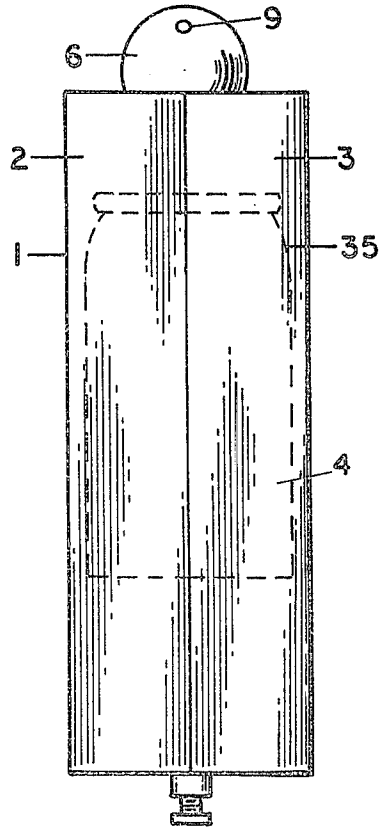


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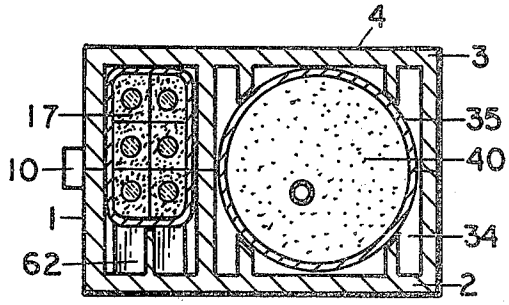


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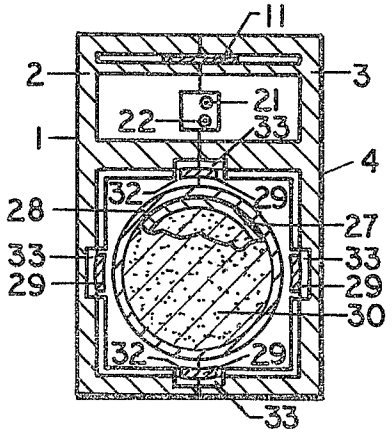


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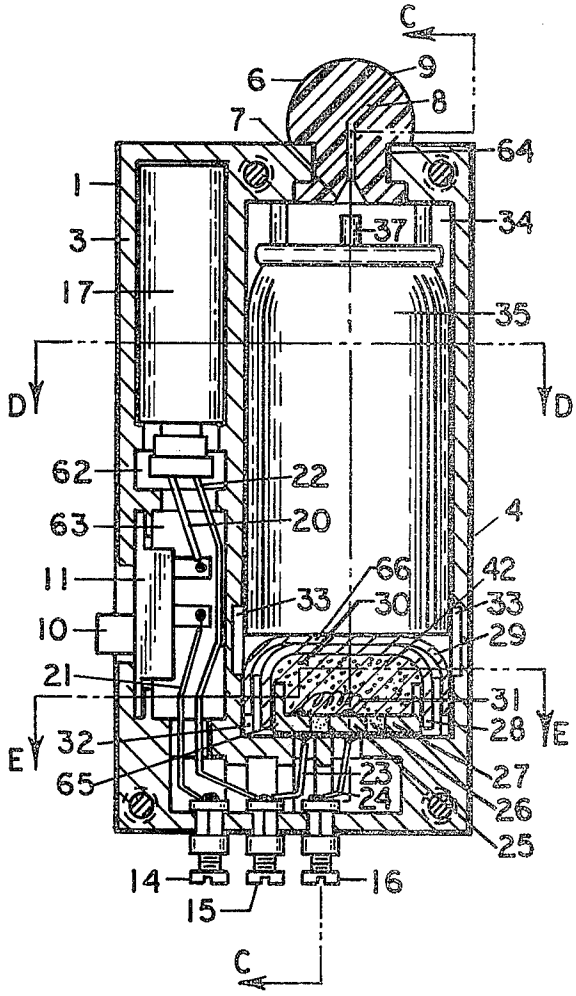


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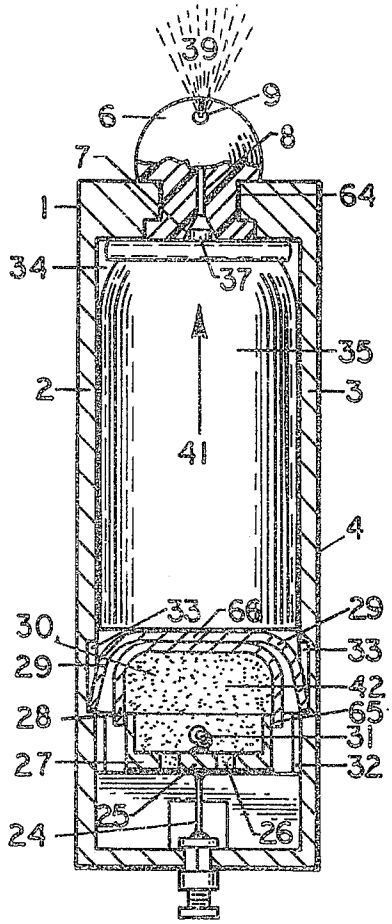


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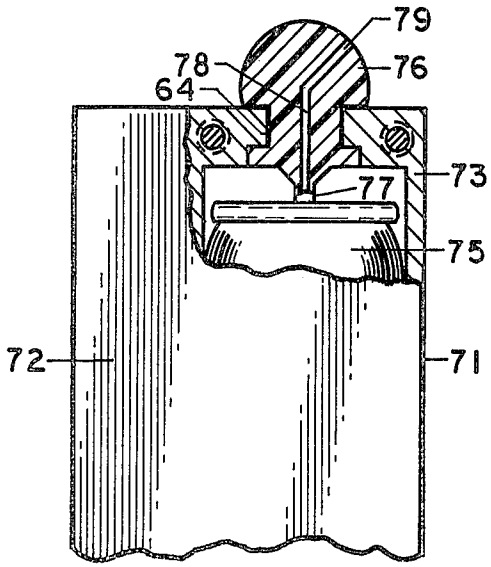


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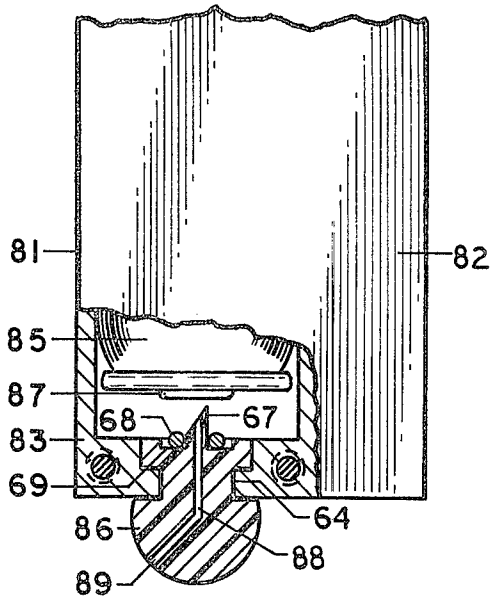


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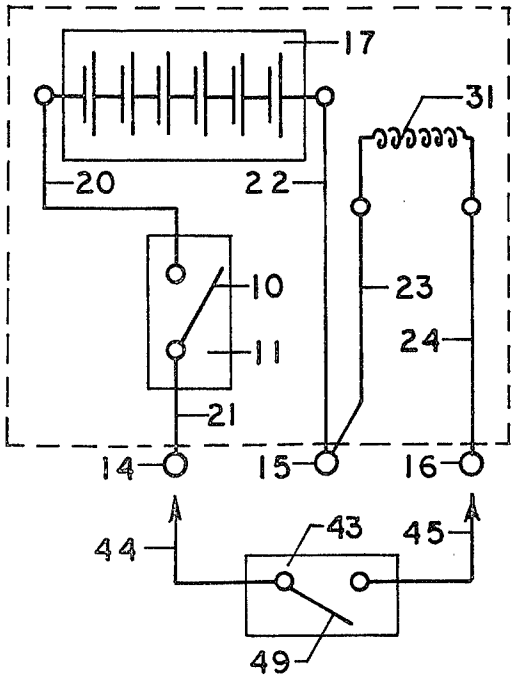


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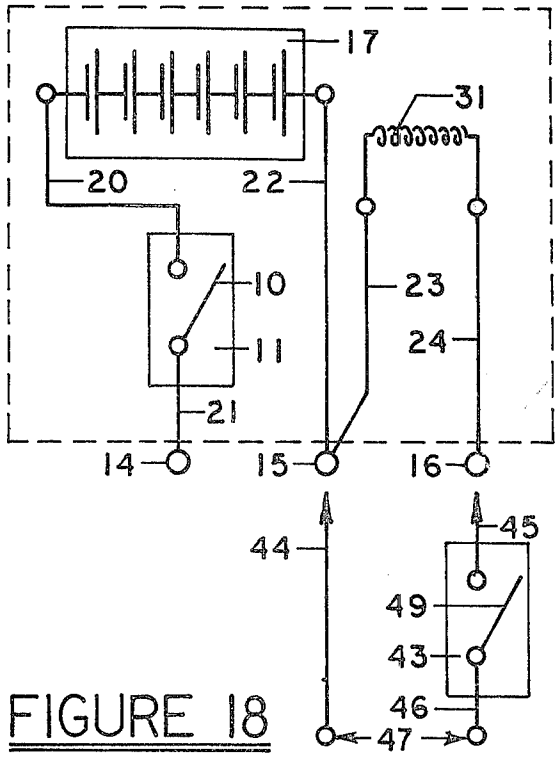


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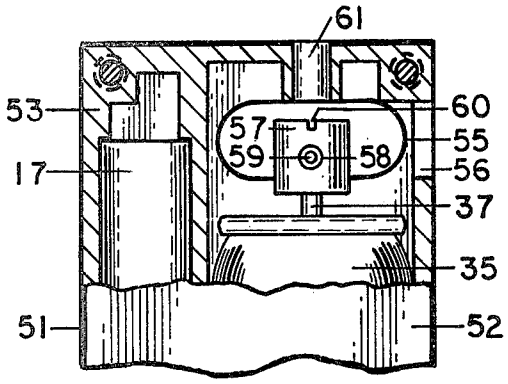


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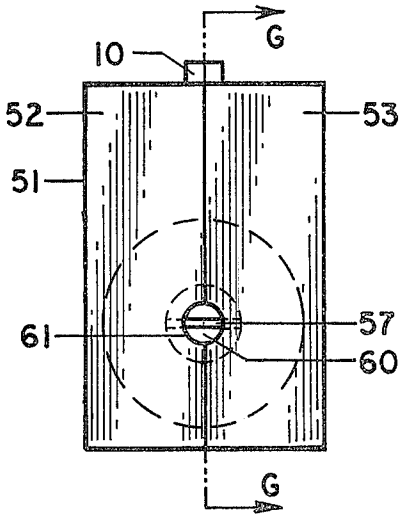


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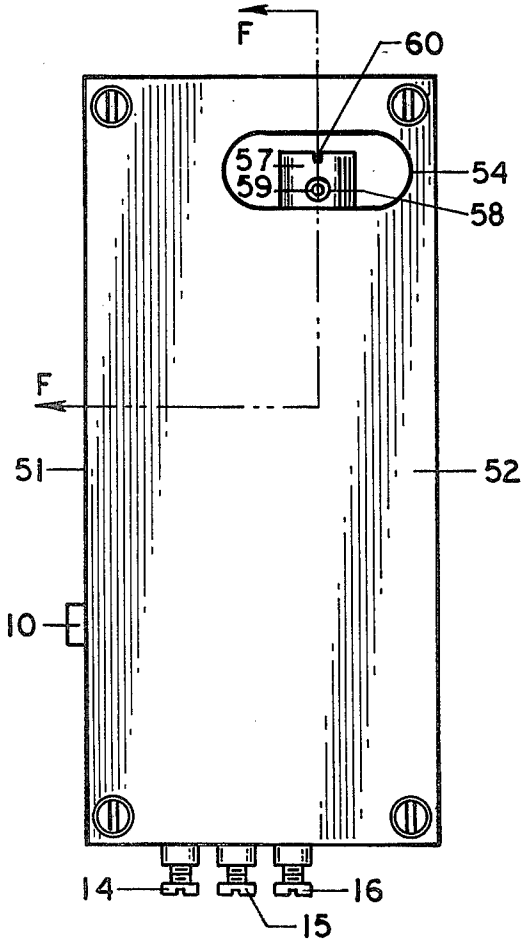


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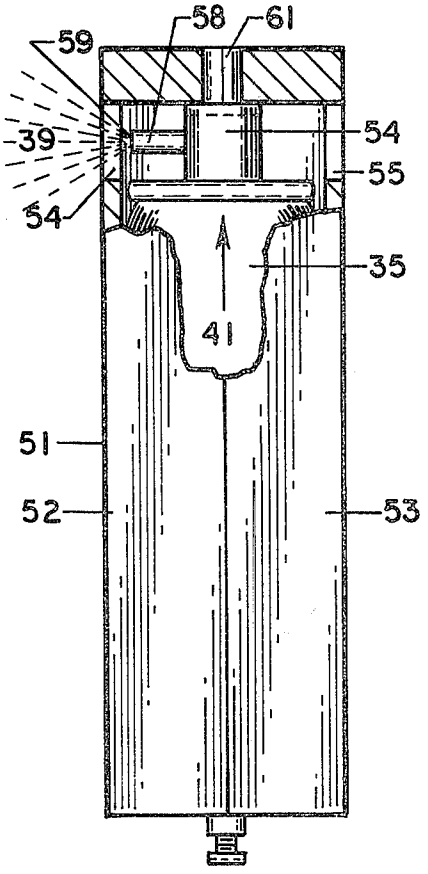


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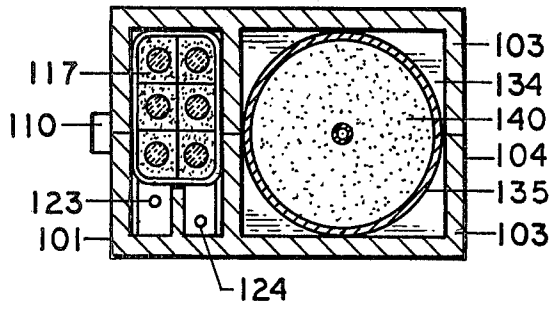


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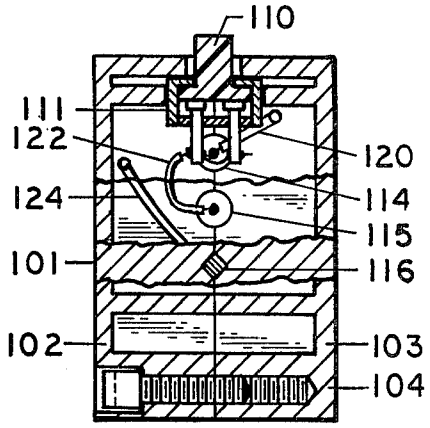


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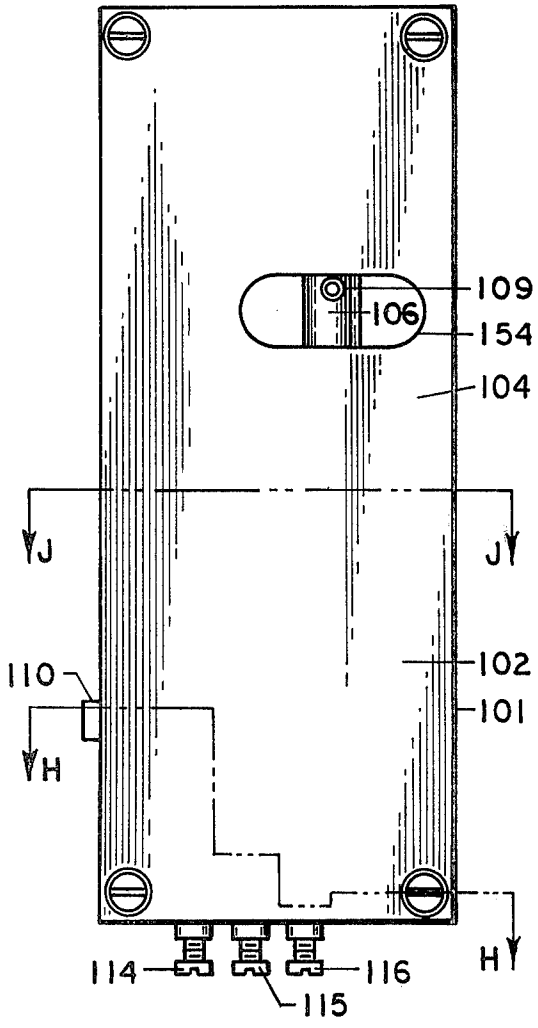


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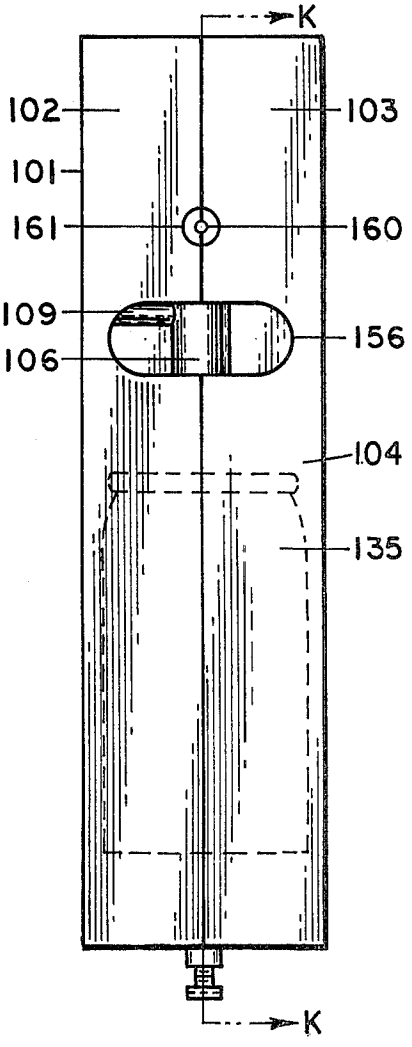


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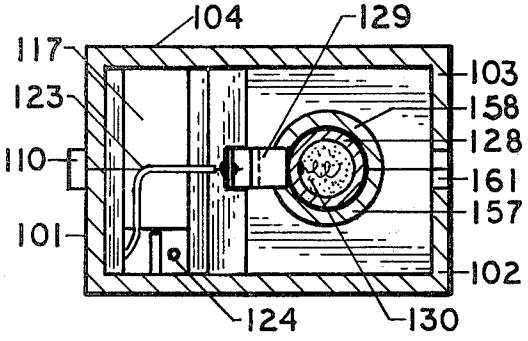


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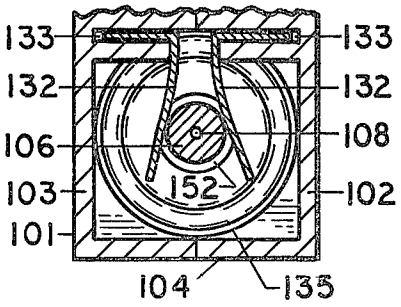


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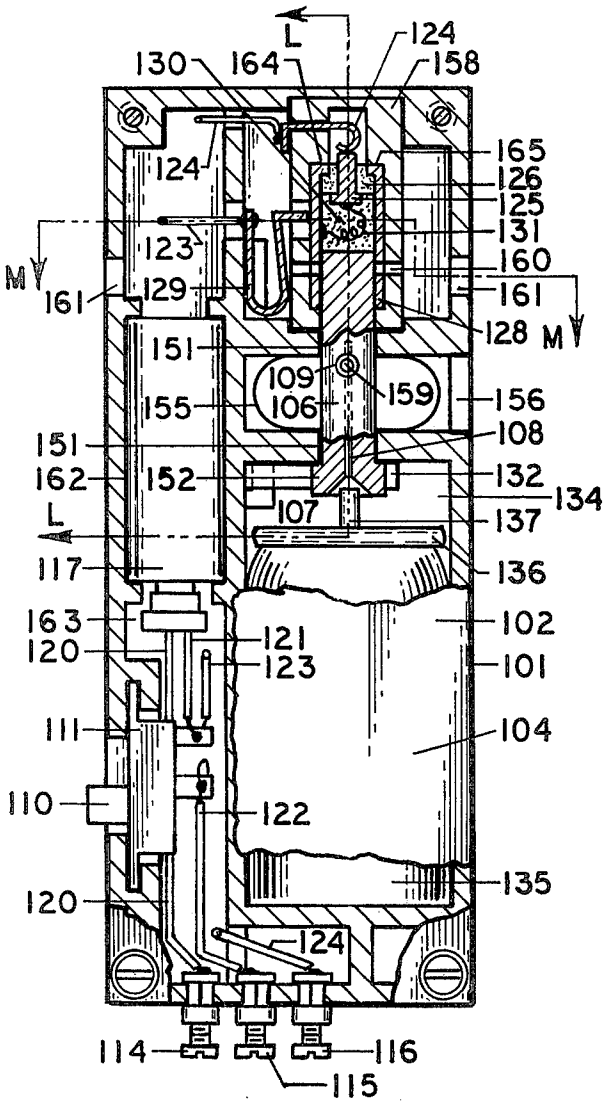


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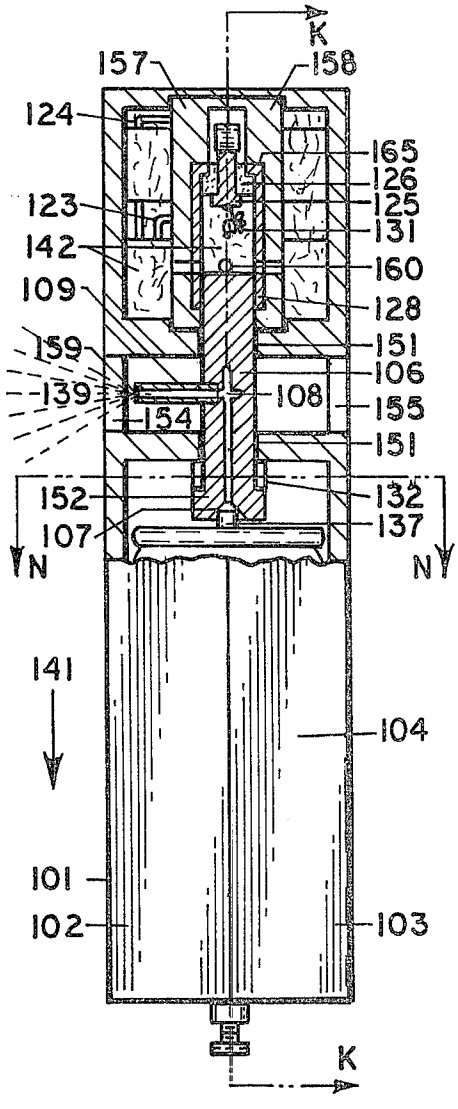


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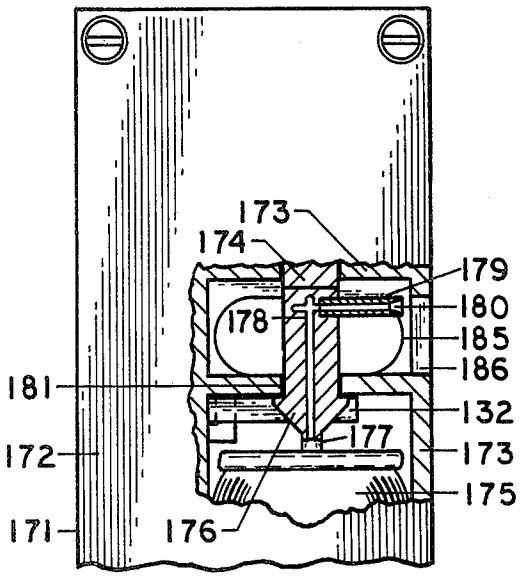


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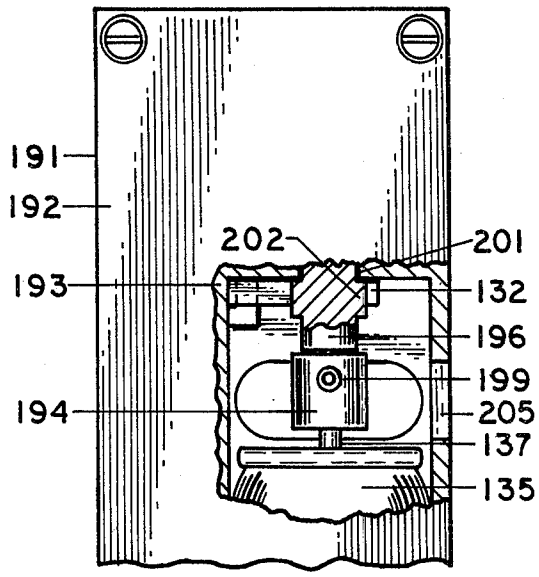


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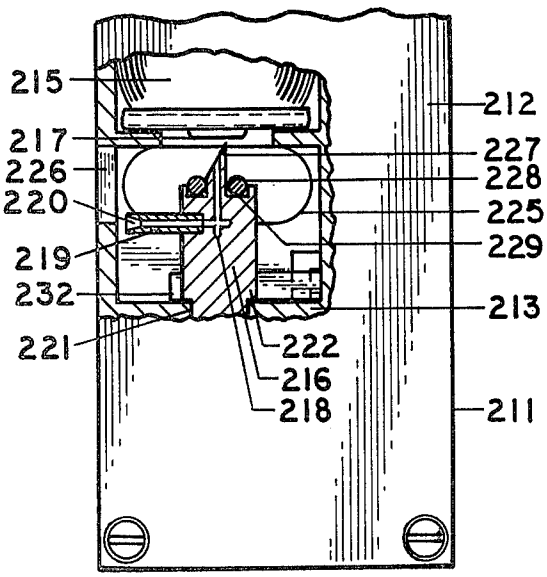


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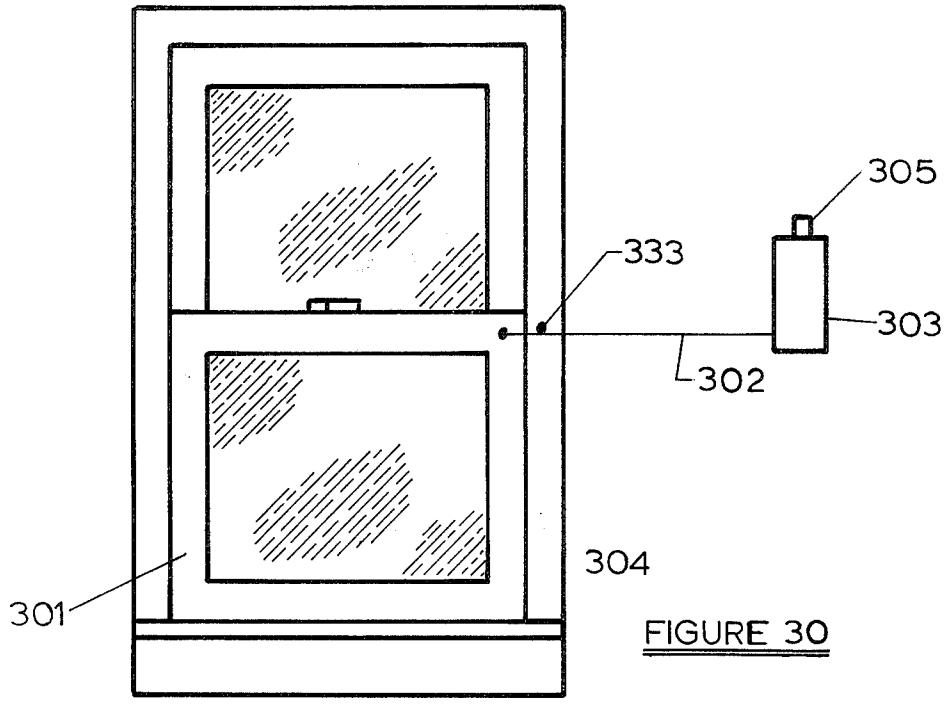


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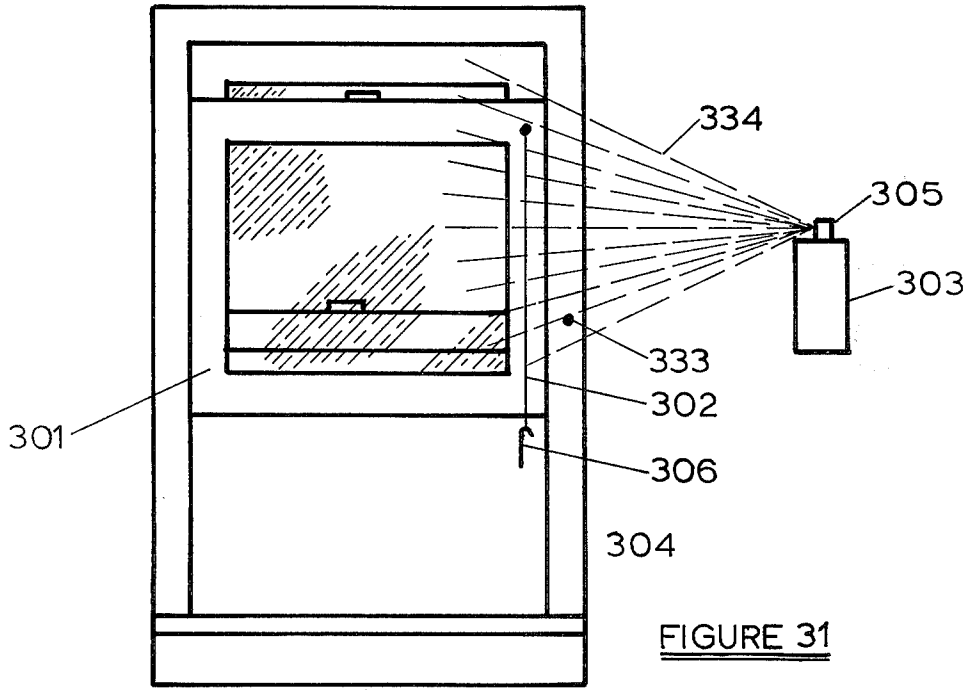


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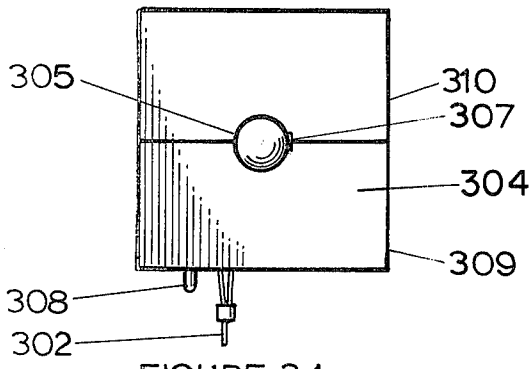


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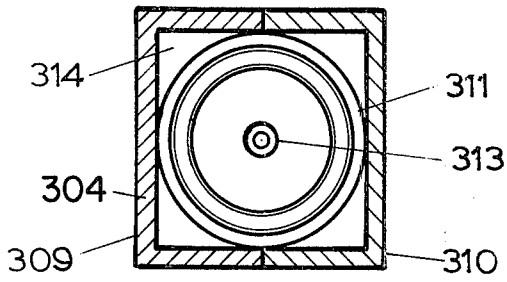


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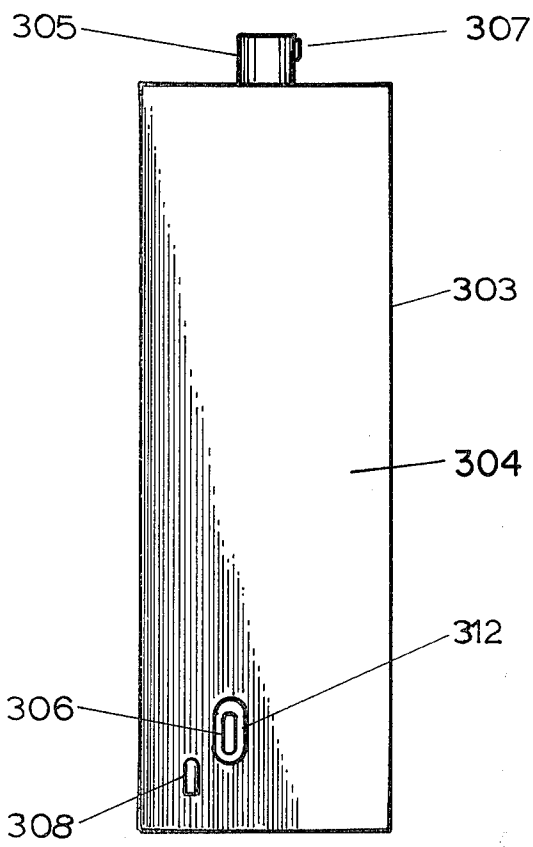


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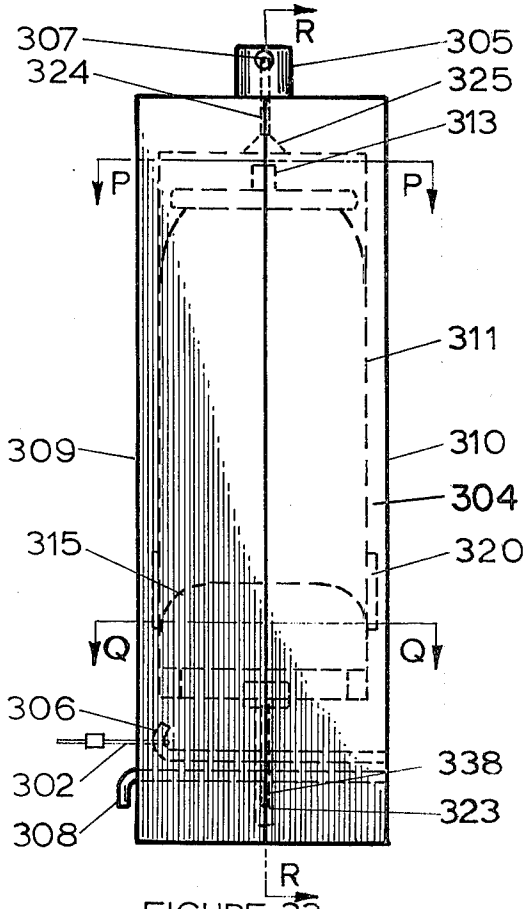


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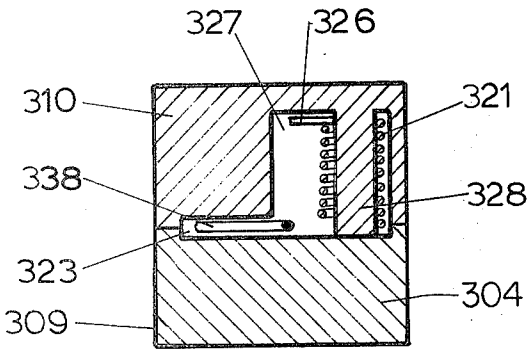


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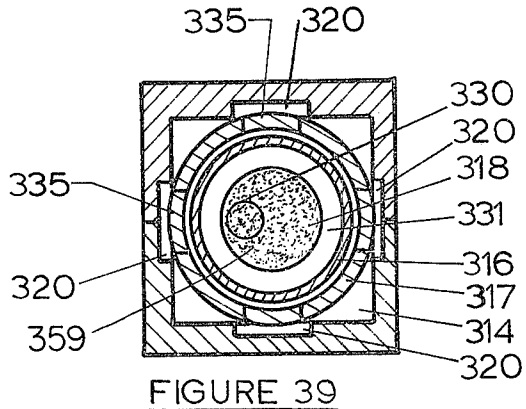


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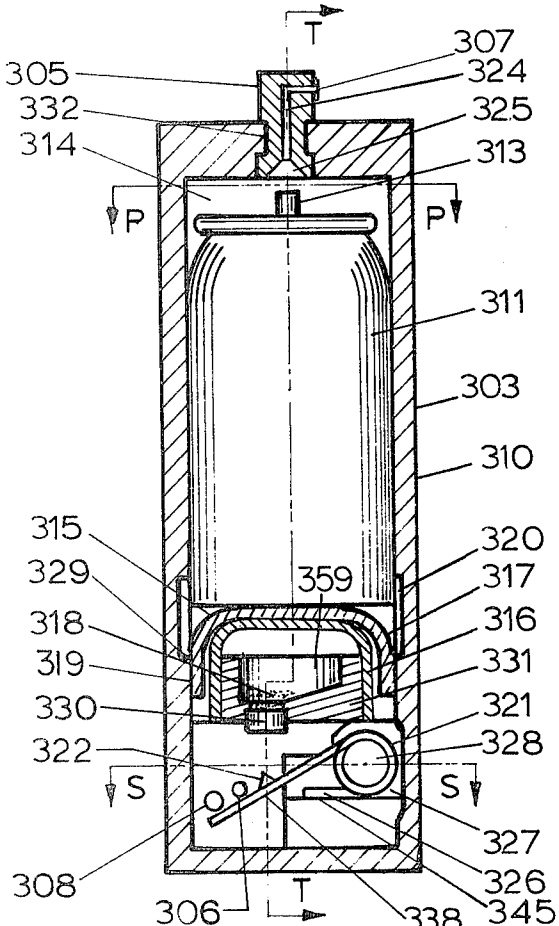


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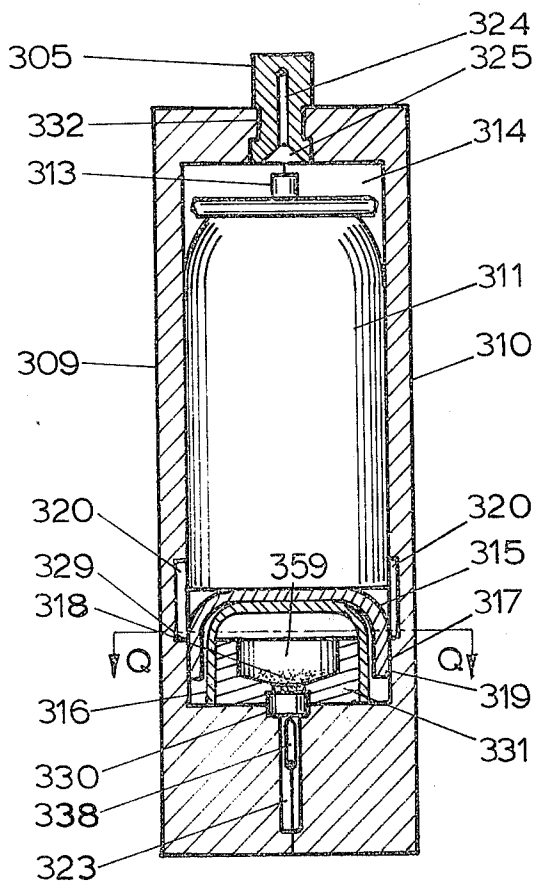


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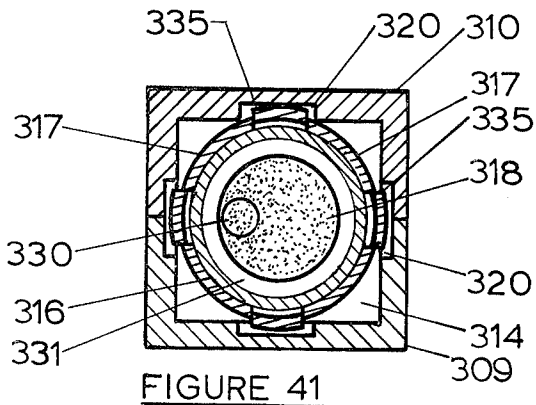


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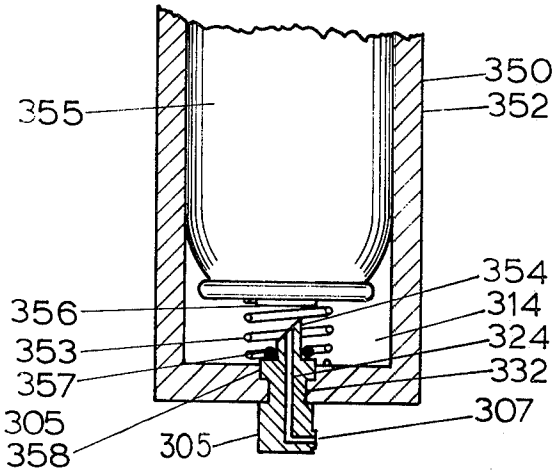


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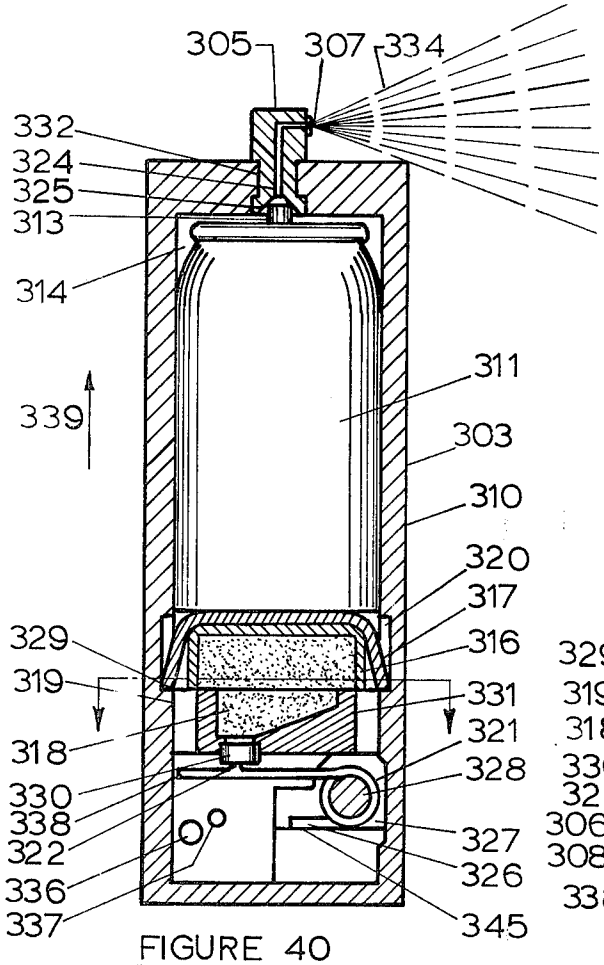


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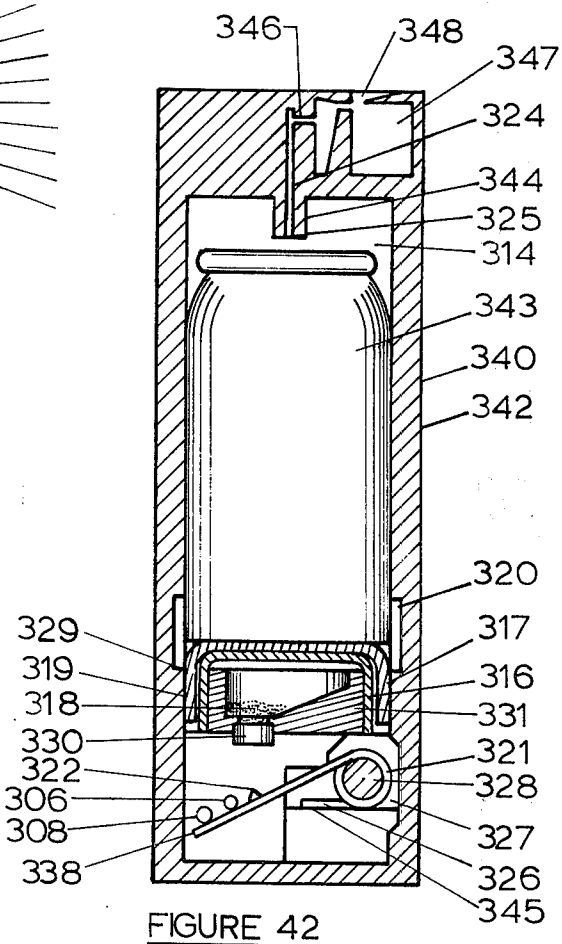


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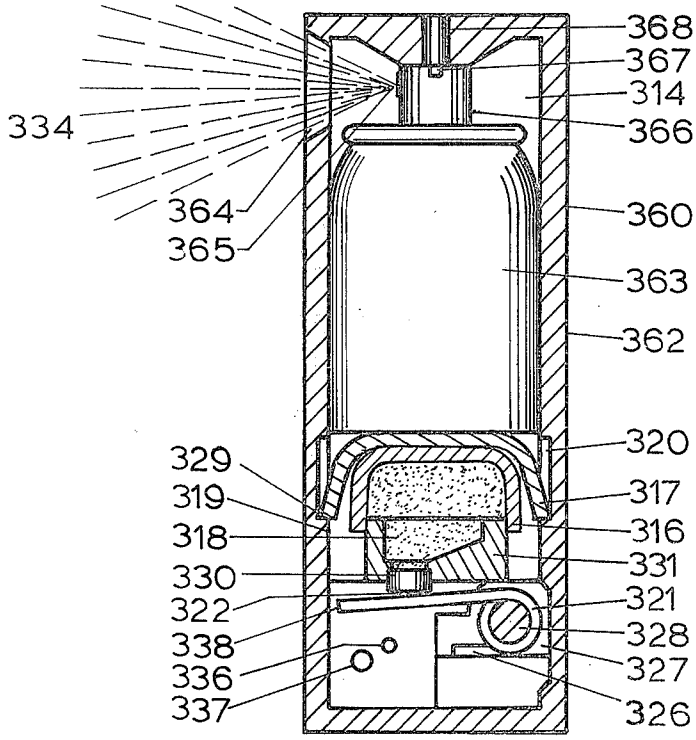


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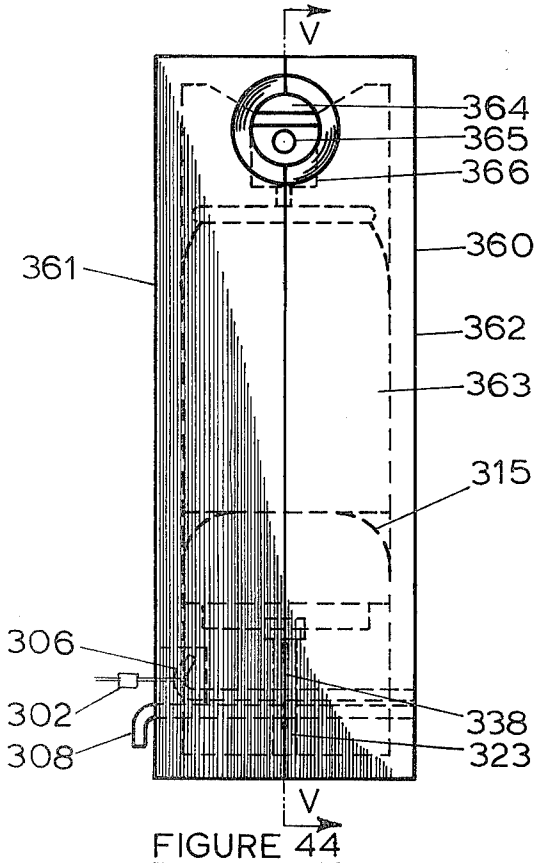


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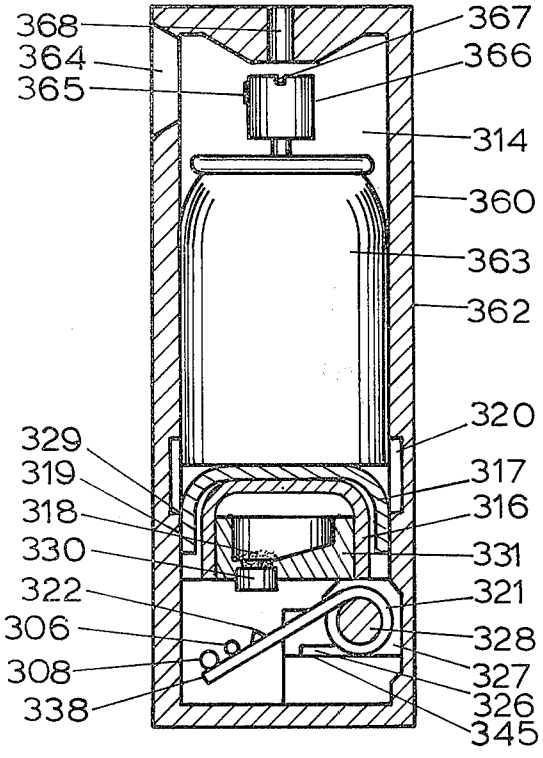


FIGURE 45

CHEMICAL DISPENSING ANTI-BURGLAR DEVICE

BACKGROUND OF THE INVENTION

The invention relates generally to an anti-burglar device and more particularly to an anti-burglar device which discharges a chemical such as tear gas from a pressurized container, one type of which is an aerosol container, into a protected area upon activation by an unauthorized person, causing the protected area to be flooded with a chemical and forcing evacuation of the protected area by the intruder; but the invention is not limited to the use of the aerosol type container.

Chemical weapons have been known in the art for many years. One type of chemical weapon is the conventional tear gas grenade in which the firing member is generally triggered manually and the grenade is manually hurled at a target area, causing the target area to be flooded with the chemical irritant.

In another type of chemical weapon, the chemical irritant is stored under pressure in an aerosol type container. The firing member is again generally triggered manually and the chemical irritant in the form of a spray is manually directed at a target.

A third type of chemical anti-burglar device discharges an explosive tear gas shell into the area but this type is both dangerous and very limited as to the amount of tear gas which is discharged into the area to be protected.

Thus what is needed is an anti-burglar device in the form of a chemical dispenser which an intruder will activate the dispensing means of the pressurized chemical container with sufficient force to release the chemical from the pressurized container but which anti-burglar device is positively secured against accidental release until triggered by an intruder and which will then release a sufficient volume of the chemical into the protected area to force evacuation by the intruder.

SUMMARY OF THE INVENTION

The principle object of the present invention is to provide an anti-burglar device of the chemical dispensing type which may be triggered directly by a small amount of mechanical movement, and yet is positively secured against accidental release.

A further object of the invention is to provide an anti-burglar device of the chemical weapon type which is readily triggered by opening a door or window by an intruder entering an unauthorized area or by moving an object with which the device is connected.

Another object of the invention is to provide an improved means of spraying or discharging the chemical into the protected area in a minimum amount of time in order to force the intruder from the protected area and to prevent the intruder from re-entering the protected area for a reasonable amount of time.

Another object of the present invention is to provide a directable emission of the chemical, such as by means of rotatably adjustable spray head, so that the invention might be located on a door, wall, or the like, and yet, when the device is discharged, the chemical is directed into the area to be protected.

An additional object of the invention is to produce an audible alarm on certain embodiments of the chemical dispensing anti-burglar device; so that the chemical dispensing anti-burglar device will provide a warning to the intended victim, the owner, or security personnel.

According to the principle aspect of the present invention there is provided an improved means of releasing a chemical from a pressurized container of the anti-burglar device. Such means includes an expansive cartridge containing an expansive charge which increases in volume when activated causing a reciprocal member to discharge the chemical from the pressurized container. The anti-burglar device is connected to a door or window or other object which might be moved by an unauthorized person entering a room or building, or other area from which it is desired to restrict unauthorized persons.

When the door or window associated with the device is opened by an unauthorized person or when the object is moved by an authorized person or when the person enters the restricted area, a contact closure sends an electric current from a power source through an electric element in the cartridge which causes the expansive charge to expand in volume. The expanding gases resulting from the expansion moves a reciprocal member which causes the discharge of the pressurized container.

Since the anti-burglar device is triggered by an electric current; the anti-burglary device can very easily be placed in a safe mode by authorized personnel by disconnecting the power source or opening a switch remote from the actuation switch.

A mechanical means for discharging the anti-burglar device through the means of a cord connected to the device is also disclosed.

The anti-burglar device of the chemical weapon type of the present invention may be utilized in homes, factories, farms, office buildings by attaching the device to doors, windows, etc. and may be used in connection with vehicles such as automobiles, boats, trucks, airplanes, etc. The device may also be employed for any other application wherein it is desired to prevent unauthorized persons from moving certain objects by placing the object against the actuator arm of the actuation switch to hold the actuation switch contacts open thereby preventing the device from firing until unauthorized movement of the subject objects.

Once actuated, the spray cannot be turned off by the intruder and the entire amount of pressurized chemical will be discharged into the protected area making it impossible for the intruder to remain in the protected area without having protective equipment.

Other objects, aspects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is an elevational view of a wall of a room having one embodiment of the chemical dispensing anti-burglar device of the present invention secured to the wall and connected by means of wires to a switch on the sash of a window in the wall.

FIG. **2** is an elevational similar to FIG. **1**, but showing the window open and showing the device discharging.

FIG. **3** is a side elevational view of the chemical dispensing anti-burglar device.

FIG. **4** is a front elevational view of the chemical dispensing anti-burglar device.

FIG. **5** is a top view of the chemical dispensing anti-burglar device.

FIG. **6** is a partial horizontal section taken along line A—A of FIG. **3**.

FIG. 7 is a vertical section taken along line B—B of FIG. 5 showing the expansive cartridge in its cocked position displaced from the pressurized container.

FIG. 8 is a vertical section taken along line C—C of FIG. 7 showing the device discharging.

FIG. 9 is a horizontal section taken along line D—D of FIG. 7.

FIG. 10 is a horizontal section taken along line E—E of FIG. 7.

FIG. 11 is a partial vertical section taken along line B—B of FIG. 5 showing a second embodiment of the antiburglar device containing a pressurized container of the aerosol type but with a recessed valve.

FIG. 12 is a partial vertical taken along line B—B of FIG. 5 but showing a third embodiment of the anti-burglar device wherein the device is inverted and the chemical dispensing device contains a pressurized container having a pierceable seal.

FIG. 13 is a front elevational view similar to FIG. 3 but showing a fourth embodiment of the chemical dispensing anti-burglar device containing a pressurized container of the aerosol type with a projecting cap.

FIG. 14 is a partial vertical section taken along line F—F of FIG. 13 showing the device discharging.

FIG. 15 is a top view of the fourth embodiment containing a projecting cap.

FIG. 16 is partial vertical sectional taken along line G—G of FIG. 15.

FIG. 17 is a diagram of the circuit using the internal batteries of the anti-burglar device.

FIG. 18 is a diagram showing a circuit using an external power supply by-passing the on-off switch of the device.

FIG. 19 is a side elevational view similar to FIG. 13 but showing a fifth embodiment of the anti-burglar device wherein the reciprocal member activates the dispensing spout.

FIG. 20 is a front elevational view similar to FIG. 14 of the anti-burglar device.

FIG. 21 is a partial horizontal section taken along line H—H of FIG. 19.

FIG. 22 is a partial horizontal section taken along line J—J of FIG. 19.

FIG. 23 is a vertical section taken along line K—K of FIG. 20 showing the expansive cartridge and the reciprocal member in its cocked position displaced from the dispensing spout of the pressurized container.

FIG. 24 is a partial vertical section taken along line L—L of FIG. 23 but showing the device discharging.

FIG. 25 is a partial horizontal section taken along line M—M of FIG. 23.

FIG. 26 is a partial horizontal section taken along line N–N of FIG. 24.

FIG. 27 is a partial vertical section taken along line K—K of FIG. 20 but showing a sixth embodiment of the anti-burglar device containing a pressurized container of the aerosol type but with recessed valve.

FIG. 28 is a partial vertical section taken along line K—K of FIG. 20 but showing a seventh embodiment of the antiburglar device wherein the device is inverted and the chemical dispensing device contains a pressurized container having a pierceable seal.

FIG. 29 is a partial vertical section taken along line K—K of FIG. 20 but showing an eighth embodiment of the device containing a pressurized container of the aerosol type with a projecting cap.

FIG. 30 is an elevational view similar to FIG. 1 but showing the anti-burglar device mounted on a wall and connected by means of a cord to the sash of a window in the wall.

FIG. 31 is an elevational view similar to FIG. 30 but showing the window open and showing the device discharging.

FIG. 32 is a side elevational view of the chemical dispensing anti-burglar device.

FIG. 33 is a front elevational of the chemical dispensing anti-burglar device.

FIG. 34 is a top elevational view of the chemical dispensing anti-burglar device.

FIG. 35 is a partial horizontal section taken along line P—P of FIG. 33.

FIG. 36 is a vertical section taken along line R—R of FIG. 33 showing the expansive cartridge and the reciprocal member in its cocked position and the pressurized container displaced from its discharging means.

FIG. 37 is a vertical section taken along line T—T of FIG. 36.

FIG. 38 is a horizontal section taken along line S—S of FIG. 36.

FIG. 39 is a horizontal section taken along line Q—Q of FIG. 37.

FIG. 40 is a vertical section taken along R—R of FIG. 33 but showing the chemical dispensing device discharging.

FIG. 41 is a horizontal section taken along line U—U of FIG. 40.

FIG. 42 is a vertical section similar to FIG. 37 but showing a tenth embodiment wherein the pressurized container has a recessed valve.

FIG. 43 is a partial vertical section similar to FIG. 40 but showing an eleventh embodiment wherein the device is inverted and the chemical dispensing device contains a pressurized container having a pierceable seal.

FIG. 44 is a front elevational view showing a twelfth embodiment of the device wherein the device contains a projecting dispensing cap.

FIG. 45 is a vertical section taken along line V—V of FIG. 44.

FIG. 46 is a vertical section similar to FIG. 45 but showing the device discharging.

Description of the Preferred Embodiment

Referring now to the drawings in detail, wherein like reference characters designate like parts throughout the various views, there is shown in FIGS. 1-10, one form of the anti-burglar chemical dispensing device, called device hereafter, of the chemical weapon type according to the present invention, generally designated 1.

As shown in FIGS. 1–2, the device 1 is secured to a wall 90 and connected with connecting wires 44 and 45 to an actuation switch 43 mounted on the window frame 70. A switch actuation pin 48 is mounted on window 50 in a manner that the switch actuation pin 48 depresses the switch actuation lever 49 and holds the switch actuation lever 49 such that the switch contacts are held open. The device 1 includes a self-contained power source such as a battery 17 but the power source is not limited to the battery 17 nor is the power source limited to being self-contained.

The device 1 whose front is shown in FIGS. 4 and 7 is comprised of a valved pressurized chemical container 35, called pressurized container 35 hereafter, a housing 4, an expansion chamber 42, an expansive charge 30 and a reciprocal member 28. One type of

housing 4 is shown as being comprised of a left housing half 2 and a right housing half 3 which when assembled provide three flat sides, other than the back for mounting the device 1 to the wall 90 adjacent to the window 70 or elsewhere, as may be convenient or desired.

Now referring to FIGS. 4 and 8, the container and expansion chamber cavity 34, the battery cavity 62, the switch cavity 63, and the cylindrical bore 64 are formed when the symetrically opposite housing halves 2 and 3 are joined together. As shown in FIGS. 7 and 8, the container and expansion chamber cavity 34 provides a means for slidably mounting the pressurized container 35 which is slidably confined in proper position. The pressurized container 35 of which one type is sold Penquin Industries, Inc., Parkesburg, Pa. identified as their "10-4 Chemical Billy" but the invention is not limited to the use of this container. The pressurized container comprises of a spring urged dispensing spout 37 which when depressed discharges a chemical 39 through the center of the dispensing spout 37. Again referring to FIGS. 7 and 8, one type of expansion chamber 42 is shown as an expansive cartridge 65, but the invention is not limited to the use of the expansive cartridge 65 shown. The pressurized container and expansive cartridge cavity 34 also provides a means for mounting the expansive cartridge 65 and contains small vertical slots 33 formed in its sides. The purpose of these slots will become apparent later.

The battery cavity 62 provides a means for installing an electrical power source such as a battery 17 and the switch cavity 63 provides a means for installing an electrical switch 11 which is used to turn the device 1 off or on as desired.

As shown in FIGS. 3 and 7, terminals 14, 15 and 16 are installed on the bottom of the device 1 for convenience. The use of the terminals 14, 15 and 16 will be described in the description of electrical circuits showing different methods of making electrical connections to device 1.

Still referring to FIG. 7, a rotatable nozzle section 6 is rotatably mounted in the cylindrical bore 64 formed when the symetrically opposite housing halves 2 and 3 are joined together as shown in FIGS. 4 and 8. It is important that the rotatable nozzle 6 and its fluid passageway 8 be in coaxial alignment with projecting dispensing spout 37 of the pressurized container 35. As the pressurized container 35 moves in the direction of arrow 41; the fluid passageway 8 and nozzle section 9 provide a means for the chemical 39 to be discharged into and directed from when the dispensing spout 37 of the pressurized container 35 is forced into the entry section 7 by the action of the expansive charge 30 contained in the expansive cartridge 65, the action of which will be later described. The funnel shape of the entry section 7 engages the dispensing spout 37, which is made of relatively soft material and therefore provides an adequate seal at the entry section 7 to retain fluid flow in the passageway 8 at pressures normally used in pressurized containers.

As best seen in FIG. 7, the expansive cartridge 65 comprises: an electric element 31, a cartridge case 27, a reciprocal member 28, a retainer spring 66, and the expansive charge 30. The expansive cartridge 65 has a an electric element 31 installed and electrically insulated from the cartridge case 27. The expansive charge 30 such as gunpowder or any other material which will expand upon ignition, heating or release, is placed in the cartridge case 27. The reciprrocal member 28 is installed over the cartridge case 27 and the assembly is held together by a light press fit between the cartridge case 27 and the reciprocal member 28. The retaining spring 66 is then placed over the assembled expansive cartridge 65 and the unit is mounted in the bottom of the pressurized cylinder cavity 34.

The retaining spring 66 has four spring sections 29 which are set in the retaining spring guide slots 32 formed in the housing halves 2 and 3. The friction of the retaining spring 66 and the retaining spring guide slots 32 holds the reciprocal number 28 in place until fired.

As can best be seen in FIGS. 1 and 7, one method of electrically connecting the device 1 is shown. The electric element wire 31 is connected to the terminal 15 by wire 23. Terminal 15 has an additional wire 22 attached to it which connects to the negative terminal of battery 17 through wire 22. The positive terminal of the battery 17 is connected to one pole of switch 11 by wire 20. The other pole of switch 11 is connected by wire 21 to terminal 17. A wire 44 is then connected from terminal 14 to a switch 43 located in an area where the intruder will activate the switch 43, one example of which is shown in FIG. 1. A wire 45 connects the other pole of switch 43 to terminal 16 thereby completing the circuit.

Switch 11 is turned on to activate the protective device 1. When an unauthorized person or intruder opens window 50; the pin 48 mounted on window 50 releases the activator arm 49 of switch 43 closing the contact of switch 43 and completing the circuit. The electric current then causes the an electric element 31 to heat which causes the expansive charge 30 to expand rapidly forcing the reciprocal members 28 and the retainer spring 29 toward the container 35. The reciprocal member 28 and container 35 continue to move in direction of arrow 41 forcing the projecting dispensing spout 37 into engagement with the entry section 7 of passageway 8 causing discharge. In addition, the retainer springs 29 snap open into the retainer spring slots 33 and prevent the reciprocal member 28 from moving in an opposite direction to arrow 41 thereby holding the projecting spout 37 in engagement with entry section 7 of fluid passageway 8 and causing the pressurized container 35 to discharge its contents 39 completely into the area to be protected.

It is an important feature that the pressurized cylinder 35 and the retaining spring 29 ride freely in their respective cavities formed in housing halves 2 and 3 and present a surface which will ride smoothly when the reciprocal member 28 is set off. Hence, substantially less force is required to discharge the device 1 of the present invention then would be required if the retaining spring 29 and pressurized cylinder 35 were tightly fit into their cavities, yet the device 1 can be safely handled in its cocked position because of the force required to depress the projecting dispensing spout 37. It is also important in this embodiment that the discharging means is comprised of a projecting dispensing spout 37 for activating a valved pressurized container 35 wherein fluid discharge is caused when the projecting dispensing spout 37 is depressed. The housing 4 contains a fluid passageway 8 having a funnel shaped entry section 7 for engaging the projecting spout 37 and for forming a seal between the funnel shaped entry section 7 and the dispensing spout 37, thereby, permitting fluid flow through the dispensing spout 37 and the funnel shaped entry section 7 when

the pressurized container 35 is moved toward the fluid passageway 8.

A second embodiment of the invention is illustrated in FIG. 11 as device 71. In this embodiment the basic structure is as previously described and like numbers are used to indicate like or corresponding parts.

In the second embodiment, the pressurized chemical container 35, shown in FIG. 7 having a projecting dispensing spout 37, is replaced with a pressurized chemical container 75, shown in FIG. 11, having a recessed valve. Pressurized containers of the aerosol type with a recessed dispensing valve are well known in the trade. In addition, the funnel shape of the entry section 7 of the fluid passageway 8 of the first embodiment shown in FIG. 7 is replaced with projecting spout 77 depending from housing halves 72 and 73, all of which are shown in FIG. 11.

In the second embodiment, all elements function as described in the first embodiment with the following difference. The pressurized container 75 is discharged by the action of the reciprocal member 28 moving the pressurized container 75 such that the recessed valve of the pressurized container 75 is depressed through engagement with projecting spout 77 and thereby effects discharge.

The chemical is then discharged through the valve of the pressurized container 75, through the projecting spout 77 and passageway 78 and out the orifice 79, then into the area to be protected.

A third embodiment of the invention is illustrated in FIG. 12 as device 81. In this embodiment, the structure is as previously described in the first embodiment and like numbers are used to indicate like or corresponding parts.

In the third embodiment, the pressurized chemical container 35, shown in FIG. 7 of the first embodiment and having a projecting dispensing spout 37, is replaced with a pressurized chemical container 85 shown in FIG. 12, having a pierceable seal 87. Pressurized container having pierceable seals are well known in the trade. In addition, the funnel shaped entry section 7 of the housing halves 1 and 2 of the first embodiment shown in FIG. 7 is replaced with housing halves 81 and 82 having a projecting section 67 shaped to pierce seal 87 and a means of making a seal capable of withstanding the pressure required for effectively discharging the chemical through the passageway 88 and into the restricted area.

Now referring to FIG. 12, FIG. 12 is an inverted embodiment of FIG. 7 of the first embodiment in which all elements function as previously described in the first embodiment with the following exceptions. The expansive cartridge 65 when fired forces the pressurized container 85 into pierceable engagement with the piercing projecting section 67. As the pierceable seal 87 is pierced by the action of the projecting forward section 67 of the housing halves 82 and 83 the reciprocal member 28 continues to move the pressurized container 85 forming a seal by the action of the O-Ring 68 and its retaining seat 69 and the pierceable seal 87 of the pressurized container 85. The chemical 39 is then discharged through the pierced seal 87 of the pressurized container 85, through passageway 88, out the orifice 89, and then into the area to be protected. It is important in this embodiment that the discharging means comprises a shaped projecting forward section 67 of the housing halves 82 and 83 to facilitate piercing the pierceable seal 87 of the pressurized container 85.

Upon movement of the pressurized container 85 toward the shaped projecting forward section 67, the shaped projecting forward section 67 pierces the pierceable seal 87 of the pressurized container 85. Continued movement of the pressurized container 85 compresses the O-Ring 68 forming a seal between the retaining seat 69 and the pressurized container 85 whereby fluid is dhscharged through the pierced seal 87 and the passageway 88.

A fourth embodiment of the invention is illustrated in FIGS. 13, 14, 15 and 16 as device 51. In this embodiment, the structure is as previously described in the first embodiment and like numbers are used to indicate like or corresponding parts.

In the fourth embodiment, the projecting dispensing spout 37 of the pressurized container 35, shown in FIG. 7, is replaced with a projecting dispensing cap 57 shown in FIGS. 13, 14 and 16. In addition, the fluid passageway 8 and the open entry section 7 are replaced with three apertures 54, 55 and 56.

Now referring to FIG. 14 and FIG. 16, the expansive cartridge 65 and reciprocal member 28 operates as before to move the pressurized cylinder 35. In this embodiment, the reciprocal member 28 urged pressurized cylinder 35 causes the projecting cap 57 to be depressed against the inside top portion of housing halves 52 and 53; thereby causing discharge through aperture 54.

Since it is possible to have more discharge apertures than aperture 54 in communication with the dispensing cap 57; apertures 55 and 56 are provided so that the dispensing cap 57 may be rotated to the desired apertures 54, 55 or 56 through the use of a screw driver in slot 60. It is also important in this embodiment that the discharging means comprises a projecting dispensing cap 57 for activating a valved pressurized container 35 wherein fluid discharge is caused when the projecting dispensing cap 57 is depressed. The housing 52 contains apertures 54 in communication with the orifice 59 of the projecting dispensing cap 57 for fluid discharge therethrough. Upon movement of the pressurized container 35, the projecting dispensing cap 57 is moved toward the housing. Continued movement causes the projecting dispensing cap 57 to be depressed whereupon the fluid is discharged through the projecting dispensing cap 57 and through aperture 54.

Now referring to FIG. 17, a typical circuit is shown using the battery 17 of device 1. The circuit shown within the dotted lines is contained within the device 1. An actuation switch 43 is connected by wires 44 and 45 to terminals 14 and 16 of the device 1. This places the component of device 1 in series with the activation switch 43 such that with switch 11 closed; an unauthorized person closing actuation switch 43 will cause electric current to flow. The current will then flow from battery 17 through: wire 20, switch 10, wire 21, terminal 14, wire 44, switch 43, wire 45, terminal 16, wire 24, electric element 31, wire 23, terminal 15, wire 22 and back to battery 17; thereby causing the device 1 to discharge.

FIG. 18 shows an additional circuit in which the power source is placed across 47. The circuit can be easily understood by those familiar with electrical schematics.

The preceding embodiments disclosed the preferred embodiments wherein an expansion cartridge is placed under a slidably mounted pressurized container. The following four embodiments will show that the chemi-

cal dispensing anti-burglar device will also work with an expansion cartridge in a manner to discharge the pressurized cylinder through the use of a reciprocal member in the form of a cylindrical plunger. In the following four embodiments, the basic structure is as described in previous embodiments and like numbers are increased by **100** to indicate like or corresponding parts. In addition, these embodiments are electrically connected in the same manner as previous described and shown in FIGS. **1** and **2.**

The device **101** whose front is shown in FIGS. **20** and **23** comprises of a valved pressurized chemical container **135,** called pressurized container **135** hereafter, a housing **104,** an expansion chamber **142,** an expansive charge **130,** and a reciprocal member **106.** One type of housing **104** is shown as being comprised of a left housing half **102** and a right housing half **103.** The housing halves **102** and **103** when assembled provide three flat sides, other than the back for mounting the devices **101** to the wall **90** adjacent to the window **70** or elsewhere, as may be convenient or desired.

Now referring to FIGS. **20** and **24** the container cavity **134,** the expansion chamber cavity **164,** the battery cavity **162,** the switch cavity **163,** and the cylindrical bore **151** are formed when the symetrically opposite housing halves **102** and **103** are joined together. As shown in FIGS. **23** and **24,** the container cavity **134** provides a means for mounting the pressurized container **135** which is held in its proper position. The pressurized container **135** of which one type is sold by Penquin Industries, Inc., Parkesburg, Pa. identified as their "**10-4** Chemical Billy" but the invention is not limited to the use of this container. The pressurized container comprises of a spring urged dispensing spout **137** which when depressed discharges a chemical **139** through the center of the dispensing spout **137.**

The battery cavity **162** provides a means for installing an electrical power source such as a battery **117** and the switch cavity **163** provides a means for installing an electrical switch **111** which is used to turn the device **101** off or on as desired.

As shown in FIGS. **19** and **23,** terminals **114, 115** and **116** are installed on the bottom of the device for convenience. The use of the terminals **114, 115** and **116** will be described in the description of electrical circuits showing different methods of making electrical connections to device **101.**

Now referring to FIG. **23, 24, 25** and **26;** the cylindrical bores **151** are coaxial to the pressurized container cavity **134.** The cylindrical bores **151** slidably mount a reciprocal member **106** which is coaxial to the pressurized container cavity **134** and in communication with the projecting dispensing spout **137** of the pressurized container **135** but is also displaced from the projecting dispensing spout **137.** The reciprocal member **106** contains a forward annular flange section **152.** When the device is triggered, the reciprocal member **106** will move down as indicated by arrow **141.** As the reciprocal member **106** moves down, the flat springs **132** slide off the annular flange section **152** onto the smaller diameter of the reciprocal member **106** and prevent the reciprocal member **106** from moving in a direction opposite arrow **141.**

The pressurized container **135** comprises a spring urged dispensing spout **137** which when depressed in the direction of the arrow **141** will discharge the chemical **139** through the center of the dispensing spout **137.** The reciprocal member **106** contains a fluid passageway **108** with an entry section **107** on the bottom and a horizontal passage **109** on the side to mount a nozzle section **159.** The fluid passageways **108, 109** and nozzle section **159** provide a means for the chemical **139** to be discharged when the entry section **107** of the reciprocal member **106** is forced over the dispensing spout **137** by the expansive cartridge **165** and held in discharge position by springs **132** acting on annular section **152** of reciprocal member **106.** The action of the expansive cartridge **165** will be shown later. The funnel shape of the entry section **107** engages the dispensing spout **137** which is made of relatively soft material and therefore provides an adequate seal at the entry section **107** to retain fluid flow in the passageways **108** and **109** at pressures normally used in the pressurized container **137.**

As best seen in FIGS. **23** and **24,** the expansive cartridge **165** comprises: electric element **131,** a cartridge case **128,** the reciprocal member **106** and the expansive charge **130.** The expansive cartridge **165** has a filament **131** installed and electrically insulated from the cartridge case **128.** The expansive charge **130** such as gunpowder or any other material which will expand upon ignition, heating or release, is placed in the catridge case **128.** The reciprocal member **106** is installed in the cartridge case **128** and the assembly is held together by a light press fit between the catridge case **128** and the reciprocal member **106.** The device **101** is electrically connected as previously disclosed wherein device **101** is substituted for device **1** in FIG. **1.** Switch **111** is turned on to activate the protective device **101.** When an unauthorized person or intruder opens window **50;** the pin **48** mounted on window **50** releases the activator arm **49** of switch **43** closes the contact of switch **43** and completes the circuit. The electric current then causes the electric element **131** to heat which causes the expansive charge **130** to expand rapidly forcing the reciprocal member **106** down toward the pressurized container **135.** The reciprocal member **106** continues to move in direction of arrow **141** forcing the entry section **107** of passageway **108** over the dispensing spout **137** of the pressurized container **135,** thereby causing discharge. As the reciprocal member **106** moves down over the dispensing spout **137,** the retaining springs **132** slip off the annular ring **152** onto the smaller diameter of the reciprocal member **106,** thereby locking the reciprocal member **106** into engagement with the projecting spout **137.** At the bottom of the stroke, the expansive gases **142** are permitted to escape through vent holes **160.**

It is an important feature that the reciprocal member **106** ride freely in the cylindrical bores **151** and present a surface which will ride smoothly when the expansive cartridge **165** is set off. Hence, substantially less force is required to discharge the device of the present invention then would be required if the device were tightly fit, yet the device can be safely handled in its cocked position.

A sixth embodiment of the invention is illustrated in FIG. **27** as device **171.** In this embodiment the basic structure is as previously described and like numbers are used to indicate like or corresponding parts.

In the sixth embodiment, the pressurized chemical container **135,** shown in FIG. **23** having a projecting dispensing spout **137,** is replaced with a pressurized chemical container **175,** shown in FIG. **27,** having a recessed valve. Pressurized containers of the aerosol type with a recessed dispensing valve are well known in

the trade. In addition, the forward section **152** and the entry section **107** of the reciprocal member **106** of the fifth embodiment shown in FIG. **23** is replaced with a reciprocal member **176** having a projecting forward section **182** and an entry section **177** all of which are shown in FIG. **27.** In this embodiment, all elements function as described in the fifth embodiment with the following difference. The pressurized container **175** is discharged by the action off the expansion cartridge **165** forcing the projecting forward section **182** of the reciprocal member **176** to engage with and to depress the recessed valve of the pressurized container **175** when the device **171** is triggered.

The chemical **139** is then discharged through the valve of the pressurized container **175,** through the entry section **177** and passageway **178** and out the orifice **180,** then into the area to be protected.

A seventh embodiment of the invention is illustrated in FIG. **28** as device **211.** In this embodiment the structure is as previously described in the first embodiment and like numbers are used to indicate like or corresponding parts.

In this embodiment, the pressurized chemical container **135,** shown in FIG. **23** of the fifth embodiment and having a projecting dispensing spout **137,** is replaced with a pressurized chemical container **215** shown in FIG. **28,** having a pierceable seal **217.** Pressurized containers having pierceable seals are well known in the trade. In addition, the forward section **152** and the entry section **107** of the reciprocal member **106** of the fifth embodiment shown in FIG. **23** is replaced with a reciprocal member **216** having a projecting forward section **227** shaped to pierce seal **217** and a means of making a fluid seal capable of withstanding the pressure required for effectively discharging the chemical **139** through the passageway **218** and into the restricted area.

Now referring to FIG. **28,** FIG. **28** is an inverted embodiment of FIG. **23** of the fifth embodiment in which all elements function as previously described in the fifth embodiment with the following exceptions. The reciprocal member **216** when moved by the expansive cartridge **165** is forced into pierceable engagement with the pierceable seal **217** of the pressurized cylinder **215** by the action of the expansive cartridge **165.** As the pierceable seal **217** is pierced by the action of the projection forward section **227** of the reciprocal member **216.** The reciprocal member **216** continues to move by the urging of the expansive cartridge **165** forming a seal by the action of the O-Ring **228** and its retaining seat **229** and the pierceable seal **217** of the pressurized container **215.** The chemical is then discharged through the pierced seal **217** of the pressurized container **215,** through passageway **218,** out the orifice **220,** and then into the area to be protected.

An eighth embodiment of the invention is illustrated in FIG. **29** as device **191.** In this embodiment the basic structure is as previously described and like numbers are used to indicate like or corresponding parts.

In this embodiment, the pressurized chemical container **135,** shown in FIG. **23** having a projecting dispensing spout **137,** is replaced with a pressurized container **135,** shown in FIG. **29,** having a projecting dispensing cap **194.** Pressurized containers of the aerosol type with projecting dispensing caps are well known in the trade. In addition, the forward section **152** and the entry section **107** of the reciprocal member **106** of the fifth embodiment shown in FIG. **23** is replaced with a reciprocal member **196** in communication with but displaced from the projecting dispensing cap **194** all of which are shown in FIG. **29.**

In this embodiment, all elements function as described in the fifth embodiment with the following difference. The pressurized container **135** is discharged by the action of the expansive cartridge **165** forcing the cylindrical plunger **196** to engage with and to depress the projecting dispensing cap **194** of the pressurized container **135** when the device **191** is triggered.

The chemical is then discharged through the valve of the pressurized container **135,** through the passageway of the projecting dispensing cap **194,** through the orifice **199** and out aperture **205,** then into the area to be protected.

The preceding embodiments disclosed the embodiments wherein an expansive cartridge is electrically activated to discharge the chemical into an area to be protected. The following four embodiments will show that the chemical dispensing anti-burglar device can be activated mechanically.

Referring now to the drawings in detail, wherein like reference characters designate like parts throughout the various views, there is shown in FIGS. **30–41,** one form of the chemical dispensing anti-burglar device, called device hereafter, of the chemical weapon type according to the present invention, generally designated **303.** The device **303** is secured to a wall **304** and connected by means of a core **302** to a window sash **301,** in the wall **304** so that upon opening of the window sash **301** by a burglar or other intruder, the device **303** will be actuated to discharge a chemical **334** into the restricted area. The device **303** whose front is shown in FIG. **33** comprises of a valved pressurized chemical container **311,** called pressurized container **311** hereafter, a housing **304,** an expansion chamber **359,** an expansive charge **318** and a reciprocal member **316.** One type of housing is shown as being comprised of a right housing half **309** and a left housing half **310.** The housing halves **309** and **310** when assembled provide three flat sides, other than the front, for mounting the device **303** to the wall **304** adjacent to the window sash **301** or elsewhere, as may be convenient.

Now referring to FIGS. **33, 36** and **37** the container and expansion chamber cavity **314,** the spring cavity **327,** and the cylindrical bore **332** are formed when the symetrically opposite housing halves **309** and **310** are joined together. As shown in FIGS. **36** and **37,** the container and expansion chamber cavity **314** provides a means for slidably mounting the pressurized container **311** which is slidably confined in proper position. The pressurized container **311** of which one type is sold by Penquin Industries, Inc., Parkesburg, Pa. identified as their "**10-4** Chemical Billy" but the invention is not limited to the use of this container. The pressurized container **311** comprises of a spring urged dispensing spout **313** which when depressed discharges a chemical **334** through the center of the dispensing spout **313.**

Again referring to FIGS. **36** and **37,** the container and expansion chamber cavity **314** also provides a mounting means for the expansive cartridge **315** and contains small vertical slots **320** formed in its sides. The purpose of these slots will become apparent later.

Still referring to FIG. **36,** a rotatable nozzle section **305** is rotatably mounted in the cylindrical bore **332** formed when the symetrically opposite housing halves **309** and **310** are joined together as shown in FIGS. **33** and **37.** It is important that the rotatable nozzle **305** and

its fluid passageway **324** be in coaxial alignment with projecting dispensing spout **313** of the pressurized container **311**. As the pressurized container **311** moves in the direction of arrow **339**; the fluid passageway **324** and nozzle section **305** provide a means for the chemical **334** to be discharged into and directed from when the dispensing spout **313** of the pressurized container **311** is forced into the entry section **325** by the action of the expansive charge **318** contained in the expansive cartridge **315**, the action of which will be later described. The funnel shape of the entry section **325** engages the dispensing spout **313**, which is made of relatively soft material and therefore provides an adequate seal at the entry section **325** to retain fluid flow in the passageway **324** at pressures normally used in pressurized containers.

As best seen in FIG. **36**, the expansive cartridge **315** comprises: an element for causing expansion, one type of which is shown as a primer **330**, the operation of which will become apparent, a cartridge case **331**, a reciprocal member **316**, a retainer spring **317** and the expansive charge **318**. The expansive cartridge **315** has a primer **330** installed in it. The primer **330** of which one type is sold by Cascade Cartridge, Inc., Lewiston, Idaho, identified as their Large Pistol Primers. The expansive charge **318** such as gunpowder or any other material which will expand upon release is placed in the cartridge case **331**. The reciprocal member **316** is installed over the cartridge case **331** and the assembly is held together by a light press fit between the cartridge case **331** and the reciprocal member **316**. The retaining spring **317** is then placed over the assembled expansive cartridge **315** and the unit is mounted in the bottom of the pressurized cylinder cavity **314**.

The retaining spring **317** has four spring sections **335** which are set in the retaining spring guide slots **319** formed in the housing halves **309** and **310**. The friction of the retaining spring **317** and the retaining spring guide slots **319** holds the reciprocal member in place until fired.

As shown best in FIGS. **36** and **38**, a means to cause expansion is shown comprising of a firing member **338**; the firing member **338** is urged toward the expansive cartridge **315** by spring action shown as a torsion spring **321**. The torsion spring **321** is mounted over a shaft **328** such that an extension **326** of the torsion spring **321** is supported against a stop **345** in the housing **304**. The firing member **338** is releasably retained in a cocked position displaced from the expansive cartridge **315**. The firing member **338** is mounted for movement between an actuation position shown in FIG. **36** and a release position shown in FIG. **40**. In the actuation position, a trigger element **306** is in engagement with the firing member **338** to retain the firing member **338** in a cocked position. Upon release, the firing member **338** is spring urged to strike the primer **330** and cause expansion of the expansive cartridge **315**.

When it is desired to activate the anti-burglary device, a cord **302** is connected to a window **301** and the device **303** as shown in FIG. **30** or any other object expected to be moved or the cord **302** positioned such that an intruder would trip the cord **302**. The safety pin **308** would be removed to arm the device **303**.

As shown in FIGS. **30, 31, 36** and **40**, an intruder opening the window **301**, would pull on cord **302**, which would then pull trigger pin **306** thereby releasing spring arm **338**. The firing extension **322** of spring arm **338** would strike the primer **330** with sufficient force to cause the discharge of the primer **330**. As the cartridge **315** expands, the spring arm **319** of spring **317** would snap into slots **320** formed in housing halves **309** and **310** and lock the pressurized container **311** in a position to discharge its entire contents.

it is an important feature that the pressurized cylinder **311** and the retaining spring **317** ride freely in their respective cavities formed in housing halves **309** and **310** and present a surface which will ride smoothly when the reciprocal member **316** is set off. Hence, substantially less force is required to discharge the device **303** of the present invention then would be required if the retaining spring **317** and pressurized cylinder **311** were tightly fit into their cavity, yet the device **303** can be safely handled in its cocked position because of the force required to depress the projecting dispensing spout **37**.

A tenth embodiment of the invention is illustrated in FIG. **42** as device **340**. In this embodiment the basic structure is as previously described and like numbers are used to indicate like or corresponding parts.

In this embodiment, the pressurized chemical container **311**, shown in FIG. **36** having a projecting dispensing spout **313**, is replaced with a pressurized container **343**, shown in FIG. **42**, having a recessed valve. Pressurized containers of the aerosol type having a recessed valve are well known in the trade. In addition, the funnel shape of the entry section **325** of the fluid passageway **324** of the ninth embodiment shown in FIG. **36** is replaced with a projecting dispensing spout **325** depending from housing half **342**, all of which are shown in FIG. **42**.

In this embodiment, all elements function as previously described in the ninth embodiment with the following difference. The pressurized container **343** is discharged by the action of the expansive cartridge **315** moving the pressurized container **311** such that the recessed valve of the pressurized container **343** is depressed through engagement with the projecting spout **344** and thereby effects discharge.

The chemical **334** is then discharged through the valve of the pressurized container **343**, through projecting spout **344**, through vertical passageway **324**, through horizontal passageway **346** and out slot **348**, then into the area to be protected. As the chemical **334** is being discharged, a whistle like sound will be produced as the chemical **334** is discharged, the pitch of which can be controlled by the chamber **347**. Thereby issuing a warning sound in addition to filling the area with a chemical to protect the area where the device **340** is installed.

An eleventh embodiment of the invention is illustrated in FIG. **43** as device **350**. In this embodiment, the structure is as previously described in the ninth embodiment and like numbers are used to indicate like or corresponding parts.

In this embodiment, the pressurized chemical container **311**, shown in FIG. **36** of the ninth embodiment and having a projecting dispensing spout **313**, is replaced with a pressurized chemical container **355** shown in FIG. **43**, having a pierceable seal **356**. Pressurized containers having pierceable seals are well known in the trade. In addition, the funnel shaped entry section **325** of the housing halves **309** and **310** of the ninth embodiment shown in FIG. **36** is replaced with housing half **352** having a projecting section **354** shaped to pierce seal **356** and a means of making a seal capable of withstanding the pressure required for effec-

tively discharging the chemical **334** through the passage **324** and into the restricted area.

The spring **353** is installed to hold the slidable mounted container **355** and its pierceable seal **356** away from the projecting piercing section **354.** It is important that the spring **353** be strong enough to support the pressurized container **355** yet be sufficiently weak to be overcome by the expandable cartridge **315** when fired.

Now referring to FIG. **43,** FIG. **43** is an inverted embodiment of FIG. **36** of the ninth embodiment in which all elements function as described in the ninth embodiment with the following exceptions. The expansive cartridge **315** when fired forces the pressurized container **355** into pierceable engagement with the piercing projecting section **354.** As the pierceable seal **356** is pierced by the action of the projecting piercing section **354,** the reciprocal member **316** continues to move the pressurized container **355** forming a seal by the action the O-Ring **357** and its retaining seat **358** and the pierceable seal **356** of the pressurized container **355.** The chemical **334** is then discharged through the pierced seal **356** of the container **355,** through passageway **324,** out the orifice **307** and then into the area to be protected.

A twelfth embodiment of the invention is illustrated in FIGS. **44, 45** and **46** as device **360.** In this embodiment, the structure is as previously described in the ninth embodiment and like numbers are used to indicate like or corresponding parts.

In this embodiment, the projecting dispensing spout **313** of the pressurized container **311,** shown in FIG. **36,** is replaced with a projecting dispensing cap **366** shown in FIGS. **44, 45** and **46.** In addition, the fluid passageway **324** and the entry section **325** are replaced with an aperture **364.**

Now referring to FIGS. **44, 45** and **46,** the expansive cartridge **315** operate as before to move the pressurized cylinder **311.** In this embodiment, the reciprocal member **316** urged pressurized cylinder **311** causes the projecting dispensing cap **366** to be depressed against the inside top portion of housing halves **361** and **362;** thereby causing discharge through aperture **364.**

Although we have herein shown and described the invention in what we have conceived to be the most practical and preferred embodiments, it is recognized that departure may be made therefrom within the scope of our invention, which is not to be limited to the details disclosed herein, but is to be accoded the full scope of the claims so as to embrace any and all equivalent structures and devices.

We claim:

1. A chemical dispensing anti-burglar device for use with a pressurized container, the device comprising: a housing, means for supporting said pressurized container in said housing; a fluid passageway extending through said housing having an entry section, means for discharging fluid from said pressurized container into said entry section of said passageway, a reciprocal member slideably mounted within said housing and adapted upon movement to discharge fluid from said pressurized container, an enclosed expansion chamber within said housing, an expansive charge within said chamber, means for causing expansion of said charge within said chamber, said reciprocal member having a surface against which the gases resulting from said expansion react to move said reciprocal member within said housing to cause discharge, a spring activated retaining means for locking said reciprocal member in position to cause discharge after said expansion, a sealing means formed around said entry section and said discharging means and arranged to prevent fluid leakage as fluid is discharged from said pressurized container into said passageway.

2. The invention of claim **1** wherein said means to cause expansion of said charge comprises an electric element through which an electric current is passed to cause said expansion.

3. The invention of claim **1** wherein said means to cause expansion of said charge comprises firing member; a means for releasably retaining said firing member in a cocked position displaced from said expandable cartridge; said retaining means including a trigger element; said trigger element being mounted for movement within said body member between an actuation position and a release position; said trigger element in said actuation position in engagement with surface of said firing member to retain said firing member in said cocked position; said trigger element in said release position allowing said firing member to cause said expansion.

4. The invention of claim **1** wherein said passageway contains a means of producing sound; said means of producing sound comprising a chamber in said passageway to cause vibrations of the fluid in said chamber resulting from oscillations produced as said fluid is flowing through a narrow slot against a knifeedge forming part of said passageway.

5. A chemical dispensing anti-burglar device for use with a pressurized container including a projecting dispensing spout actuated to emit fluid discharge therethrough upon depresson thereof, a housing, means for supporting said pressurized container in said housing, a fluid passageway extending through said housing having an entry section, a reciprocal member slideably mounted within said housing and adapted upon movement to actuate said dispensing spout, an enclosed expansion chamber within said housing, an expansive charge within said chamber, means for causing expansion of said charge within said chamber, said reciprocal member having a surface against which the gases resulting from said expansion react to move said reciprocal member, a spring activated retaining means for locking said reciprocal member in a position to actuate said dispensing spout and thereby cause discharge after said expansion, a sealing means formed around said entry section and dispensing spout and arranged to prevent fluid leakage as fluid is discharged from said pressurized container into said passageway.

6. A chemical dispensing anti-burglar device for use with a pressurized container including a pierceable section, a housing, means for supporting said pressurized container in said housing, a fluid passageway extending through said housing having an entry section, means for piercing said pierceable section whereby fluid may be discharged into said passageway, said means for piercing comprises a projecting spout depending from said entry section of said passageway, a reciprocal member slideably mounted within said housing and adapted upon movement to cause piercing of said pierceable section, an enclosed expansion chamber within said housing, an expansive charge within said chamber, means for causing expansion of said charge within said chamber, said reciprocal member having a surface against which the gases resulting from said expansion react to move said reciprocal member, a

spring activated retaining means for locking said reciprocal member in a position to cause discharge after said expansion, a sealing means formed around said entry section and pierceable section and arranged to prevent fluid leakage as fluid is discharged from said pressurized container into said passageway.

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