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DEVICE FOR THE AUTOMATIC TREATMENT OF THE AIR IN AN ENCLOSED SPACE HAVING A DOOR

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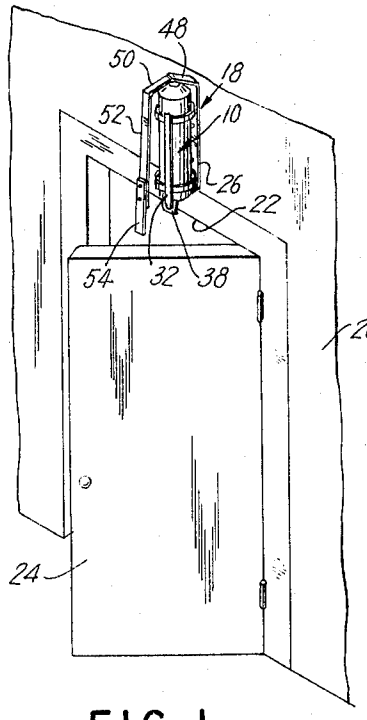


FIG. 1

FIG. 2

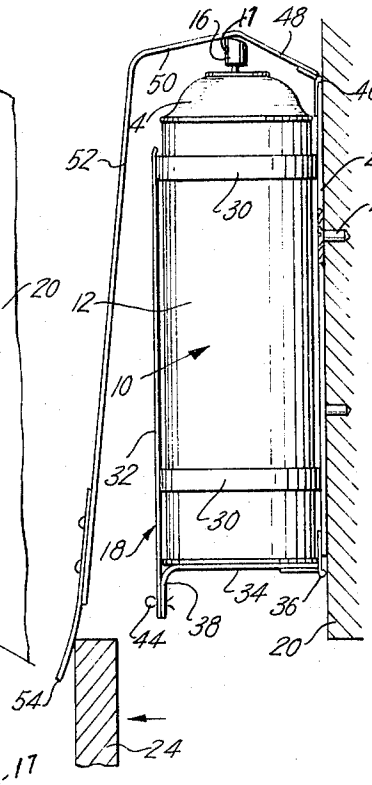


FIG. 3

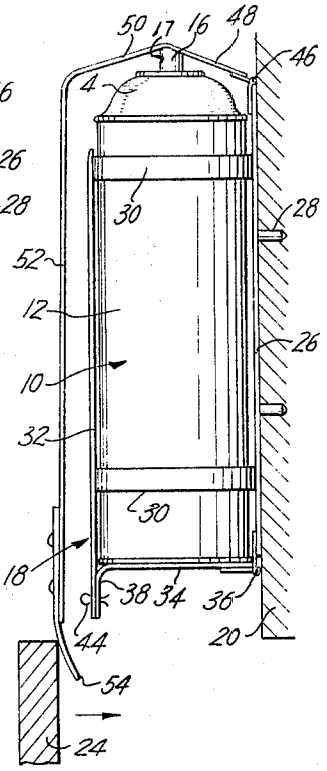


FIG. 4

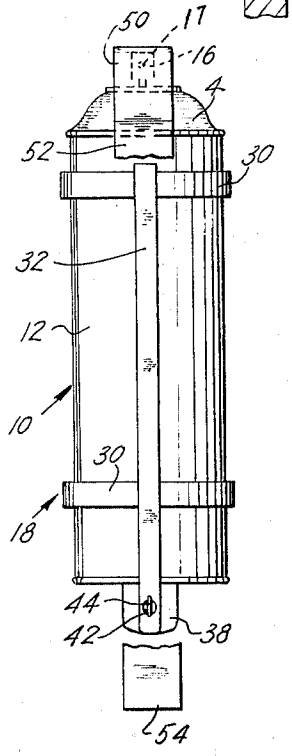
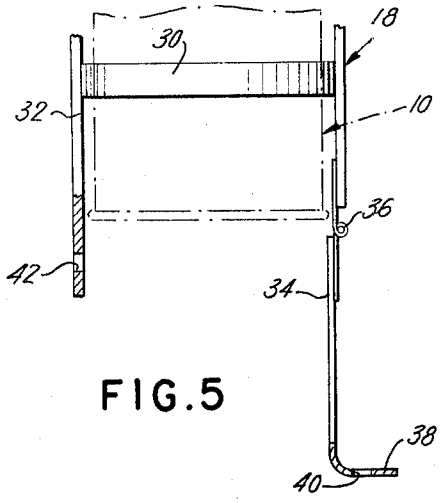


FIG. 5



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DEVICE FOR THE AUTOMATIC TREATMENT OF THE AIR IN AN ENCLOSED SPACE HAVING A DOOR

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The present invention relates to a device for the automatic treatment of the air in a room and, more particularly, to a device for the automatic spraying of the air in a room, as with a sterilizing, de-odorizing or perfuming spray.

It is an object of the present invention to provide a device, including a pressurized spray dispenser that is operable by the movement of a door of an enclosed space, that will cause the discharge of spray from the dispenser into the space, each time the door is used, preferably each time the door to the space is closed.

It is another object of the present invention to provide a device, of the character described, that is actuated directly and solely by the door, to produce a spray into the space upon the movement of the door.

It is still another object of the present invention to provide a device, of the character described, which is of relatively simple and economical construction and simple and easy to install.

It is a further object of the present invention to provide a device, of the character described, which is sure and certain in operation.

It is a still further object of the present invention to provide a device, of the character described, which permits the easy and ready replacement of spent pressure dispensers.

The foregoing and other objects and advantages of the device of the present invention will become more readily apparent to those skilled in the art from the embodiments thereof shown in the accompanying drawing, and from the description following. It is to be understood, however, that such embodiments are shown by way of illustration only, to make the principles and practice of the invention more readily comprehensible and without any intent of limiting the invention to the specific details therein shown.

In the drawings:

FIG. 1 is a fragmentary, perspective view showing one embodiment of the device of the present invention as installed for operation by a door, ready for operation, the door being shown in open position;

FIG. 2 is a side elevation, on an enlarged scale, of an installation of the device of the present invention, on a wall above a door; the device being shown in non-operating position;

FIG. 3 is a view similar to that of FIG. 2, of the device, with the installation shown in spraying position;

FIG. 4 is a front elevational view of the device of the present invention, shown in FIG. 2; partly broken away to illustrate structural details; and

FIG. 5 is a fragmentary side elevation of the lower portion of the pressure-dispenser supporting frame of the invention, with the dispenser-bottom supporting member shown in open position for the insertion and removal of a pressure-dispenser.

Referring now, in greater detail to the embodiment of the invention illustrated in the drawings, the same is

shown to utilize a pressure dispenser, generally designated as **10**, consisting of a conventional, cylindrical container **12**, having a domed top section, **14**, mounting a depressible, valve-opening, discharge nozzle head, **16**, having the spray output, **17**, the head **16** being normally resiliently held in upwardly displaced, valve-closing position.

The invention further comprises a holder for the pressure dispenser **10**, generally designated as **18**, which is securable against a wall, **20**, immediately above the opening **22**, for a door, **24**.

The pressure-dispenser supporting frame may preferably be of open-work construction, comprising an upright bar, **26**, having screw openings, **28**, and is preferably of a height substantially equal to the height of the container **12** of the pressure dispenser **10**, exclusive of the nozzle-head **16**.

The bar **26** has secured thereto, in normal relation thereto, a pair of annular members or rings, **30**, of equal diameter, which are disposed in spaced relation to the ends of the bar **26** and spaced apart from one another a distance less than the height of the cylindrical portion **14** of the container **12**. The two rings **30** are connected, at a point diametrically opposed to the bar **26**, by a second bar, **32**, which extends from the upper of the rings **30** to a point below the lower of the rings **30**; the rings and bars forming a cylindrical housing for a pressure dispenser **10**.

A base or bottom closure bar, **34**, of a size equal approximately to the outer diameter of the rings **30**, is hinged by one end, as at **36**, to the lower end of the bar **26**, for movement into and out of position transverse to the axis of the frame **18**, and is provided with an offset portion, **38**, at its other end, which is adapted, when the bar **34** is in horizontal or transverse position, to be disposed against the lower projection of bar **34**; the offset end **38** and projection of bar **34** being provided with the respective openings, **40** and **42**, for receiving means, such as a cotter pin, **44**, for securing the bar in transverse position, across the bottom of the frame **18** for supporting a dispensing container **10** disposed within the frame.

Hingedly secured to the upper end of the bar **26**, as at **46**, is one end of a bar, **48**, that rests on and is supported by the nozzle-head **16** of the dispenser **10**, preferably in slightly upwardly-slooping relation. The bar **48** has an extension, **50**, which preferably is offset slightly downwardly relative thereto; the nozzle-head **16** being, preferably, disposed in the angle formed by the bar **48** and extension **50** and contacted by both of them. The bar extension **50** is provided, at its other end, with a depending extension, **52**, offset relative to the extension **50** at such angle that the bar extension **52** is normally disposed alongside of the frame bar **32**, in slightly spaced relation thereto, and, when bar sections **48** and **50** rest on a nozzle head **16**, in downwardly divergent relation to bar **32**. The bar extension **52** may be of a length to terminate substantially coequally with the lower end of the bar **32** and has secured to its lower end portion a strip, **54**, of stiffly resilient material, such as rubber, which extends a distance below the lower end of bar **32**.

For use, the dispenser supporting frame **18** is attached to the wall **20** by bar **26**, as by means of screws, **56**, passing through the screw-opening **28** in the bar. The frame on housing **18** is so attached that the lower end of bar extension **52** clears the door opening **22** but the resilient strip **54**, projecting therefrom, overlies such door opening.

To dispose a dispenser **10** within the supporting frame **18**, the cotter pin **44**, or like device, is removed so that

the bottom closure bar 34 swings downwardly to clear the way into the frame. The dispenser 10 is then inserted, nozzle-head 16 up, through the bottom of the frame, and the bar 34 is raised and interengaged with the projection of the bar 32 by means of the cotter pin, or the like. It may here be stated that the weight of bar 48 with its extensions 50 and 52 is such that it is insufficient of and by itself to cause a valve-opening depression of nozzle head 16, so that such nozzle head will remain in its normal upwardly-biased position and raise bar 48 and its extensions 50 and 52, so that the latter is disposed at a divergent angle to the axis of the frame 18.

It will be clear that when the frame 18 containing a dispenser 10 is in place and the door 24 is opened, the top edge of the door will engage the projecting resilient strip 54 and will move and offset it and the bar extension 52 outwardly and upwardly to clear the door top without any difficulty and without any effect on the pressure dispenser 10. However, when the door 24 is closed, its edge will engage against the outer face of the strip projection 54 and press it inwardly towards the frame 22, causing the strip and the bar extension to which it is attached to be pushed towards the supporting frame 18 and thereby lowering the bar section 48 and its extension 50 onto the nozzle head 16, to depress the same, causing a discharge of spray through the valve of the pressure dispenser that is opened by such nozzle head movement. It will be understood that the resistance of the resilient strip when added to the weight of the bar sections 48, 50 and 52 will be sufficient to cause the depression of the nozzle head 16 and that, when the nozzle head is in lowermost depressed position its resistance against pressure will be sufficient to overcome the resistance of the resilient strip 54 to bending, so that the latter is resiliently offset to permit clearance of the door under it for shutting; the resilient strip 54 returning to normal, straight position after it is cleared by the door.

This completes the description of the device of the present invention for the automatic discharge of spray into an enclosed space. It will be readily apparent that such device is capable of utilizing conventional pressurized dispensers that are now readily available on the market; that such device requires the use, in combination with such pressurized spray dispensers, of a simple supporting and actuating structure that is economical to manufacture, easy to install, and sure and certain in its operation.

It will also be apparent that the installation of the device of the present invention will in no way interfere with the function of the door by which it is activated, and that it will not unduly affect the appearance of the space in which it is installed.

It will be further apparent that numerous modifications and variations in the device of the present invention may be made by anyone skilled in the art, in accordance with the principles of the invention hereinabove set forth without the exercise of any inventive ingenuity. We desire, therefore, to be protected for any and all such variations and modifications that may be made within the spirit of the invention and scope of the claims hereto appended.

What we claim is:

1. A device of the character described comprising, in combination, a pressurized spray dispenser including a container and a member projecting therefrom and movable to open and shut the outlet valve thereof, said member resiliently biased to normally maintain said member in valve-closing position, with a structure for supporting said spray dispenser for actuation by a moving door, said structure including means securable on a structural surface adjacent a door opening for securing and holding said spray dispenser and a member actuating bar pivotally supportable by one end in position to overlie and engage against said movable member, said actuating bar

adapted to have its other end extending substantially to a level with the edge of said door opening when said holding structure is secured on said structural surface, said bar having a stiffly resilient strip secured thereto at its other end and projecting therefrom to overlap said door opening when said holding means is secured in said position and to be engaged by said door in its movement in one direction for initially pressing said bar against said member to move said member into valve opening position and to be offset by further movement of said door to permit the movement of the door past it.

2. The device of claim 1, wherein said bar is pivotally secured on said holding structure.

3. The device of claim 1, wherein said holding structure comprises a plurality of spaced parallel bar connected by at least one transversely disposed annulus, said structure having closure means at one end for supporting the bottom of a pressurized spray dispenser therein, said actuating bar pivotally connected to one of said parallel bars at the other end of said structure.

4. The device of claim 3 wherein said closure is pivotally connected on the end of one of said bars for opening and closing said end of said structure and means are provided for securing said closure in closed position.

5. The device of claim 3, wherein said member projects above said container and is movable axially thereof and said actuating bar extends across the other end of said structure and longitudinally alongside thereof in divergent relation thereto.

6. A structure for supporting a pressurized spray dispenser having a member projecting therefrom movable for opening and shutting the valve of said spray dispenser, said member resiliently biased to normally maintain said member in valve closing position, said structure comprising, a housing open at one end and having a closure at its other end and adapted to receive and hold said pressurized spray dispenser with its member projecting therefrom and a member actuating bar pivotally connected to said housing at its open end adapted to rest on the projecting member of a dispenser disposed therein, said bar having a stiffly resilient strip connected thereto at its free end and extending therefrom, said strip adapted to be engaged by a door moving in one direction for initially pressing said bar against said member to move it into valve opening position and to be offset for clearance by said door upon the further movement of said door in said direction.

7. A structure for supporting and activating a pressurized spray dispenser, said dispenser including a container section and a member projecting from one end thereof, said member movable axially of said container for opening and shutting the valve of said spray dispenser and resiliently biased to be normally maintained in extended, valve closing position, said structure comprising a housing open at one end and having a closure at its other end and adapted to receive and hold said pressurized spray dispenser with its said member projecting thereabove, and a member actuating bar pivotally connected to said housing at its upper end arranged to rest on said projecting member when a pressurized spray dispenser is disposed within said housing, said bar having a stiffly resilient strip connected to and extending from its free end, said strip adapted to be engaged by a door moving in one direction for initially pressing said bar against said member to dispose it into valve opening position and to be offset for clearance by said door upon further moving of said door in said direction.

8. The structure of claim 7, wherein said actuating bar extends across the open end of said housing and is provided with an extension, extending divergently along said housing, said stiffly resilient strip connected to the free end of said extension.

9. The structure of claim 8, wherein said closure is pivotally connected to said housing for opening and closing said end thereof for insertion and removal of a dis-

penser, and means are provided for securing said closure, in closed position.

10. The structure of claim **9**, wherein said housing is formed of a plurality of parallel bars, said bars connected by at least one annulus disposed in normal relation to said bars, said actuating bar pivotally connected to one of said parallel bars at the open end of said housing and said closure pivotally connected to one of said bars at the other end of said housing.

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