United States Patent [19]

Jente

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[54] **AUTOMATIC DISPENSER**

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[52] **U.S. Cl.** **222/179**

[51] **Int. Cl.**[2] **B67D 5/06**

[58] **Field of Search** 222/174, 179, 180, 340, 222/383, 394

[56] **References Cited**

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[57] **ABSTRACT**

The invention disclosed is for an automatic dispenser which may be operated in special environments without need for hand touching the dispenser. The dispenser includes a foot-operated pneumatic pump which is in communication with an expandable diaphram. Upon expanding, the expandable diaphram forces a dispensing nozzle engaging plate onto the exit spout of an aerosol container containing a dispensable composition and thereby the contents of the aerosol container are released through the dispensing nozzle.

2 Claims, 5 Drawing Figures

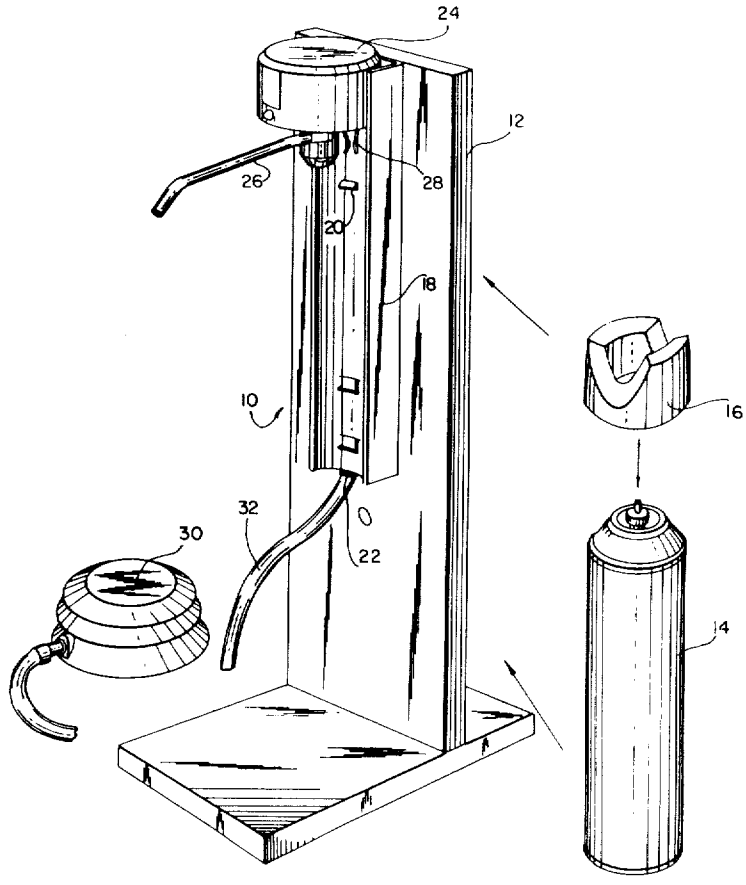


FIG. 1

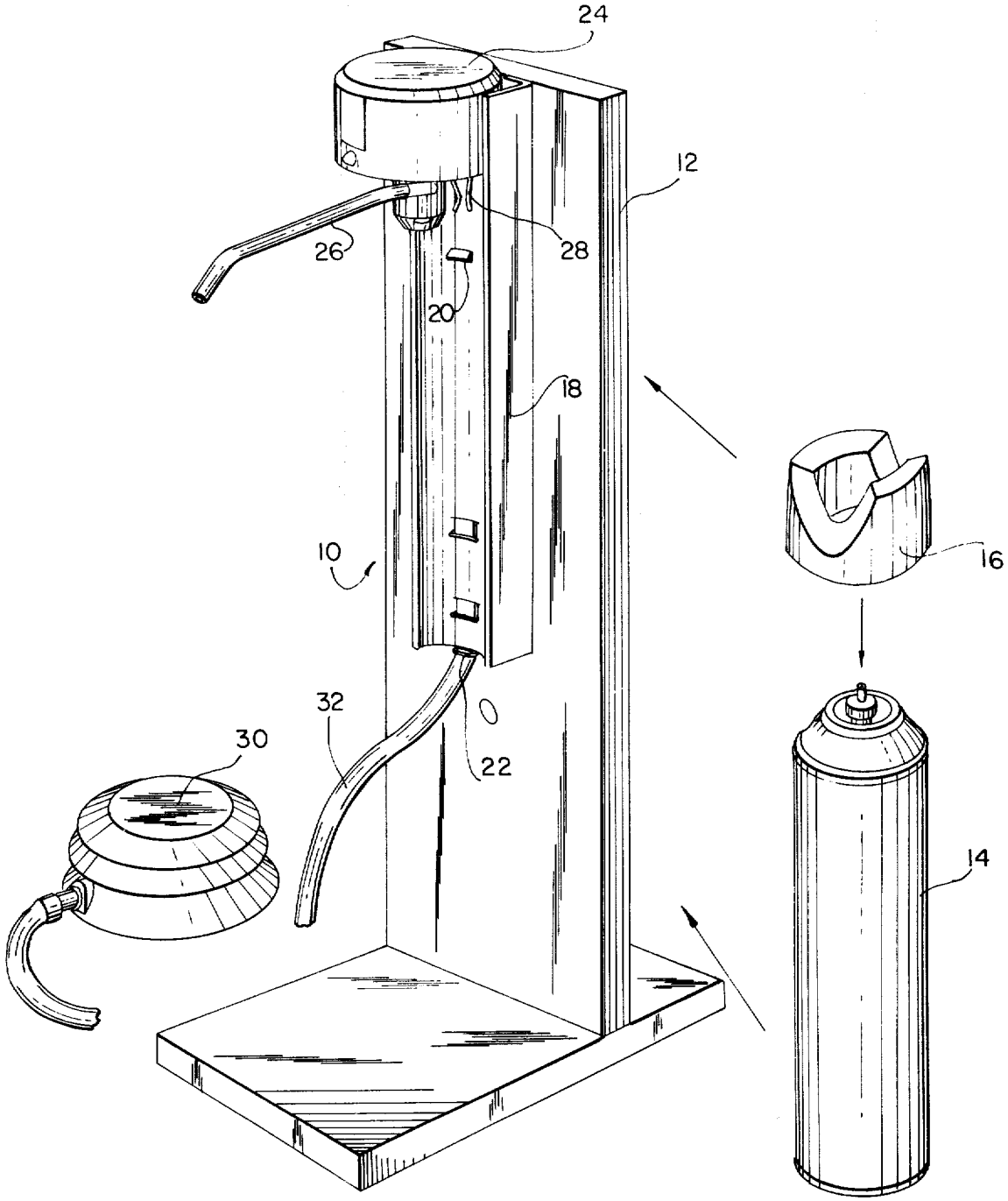


FIG. 2

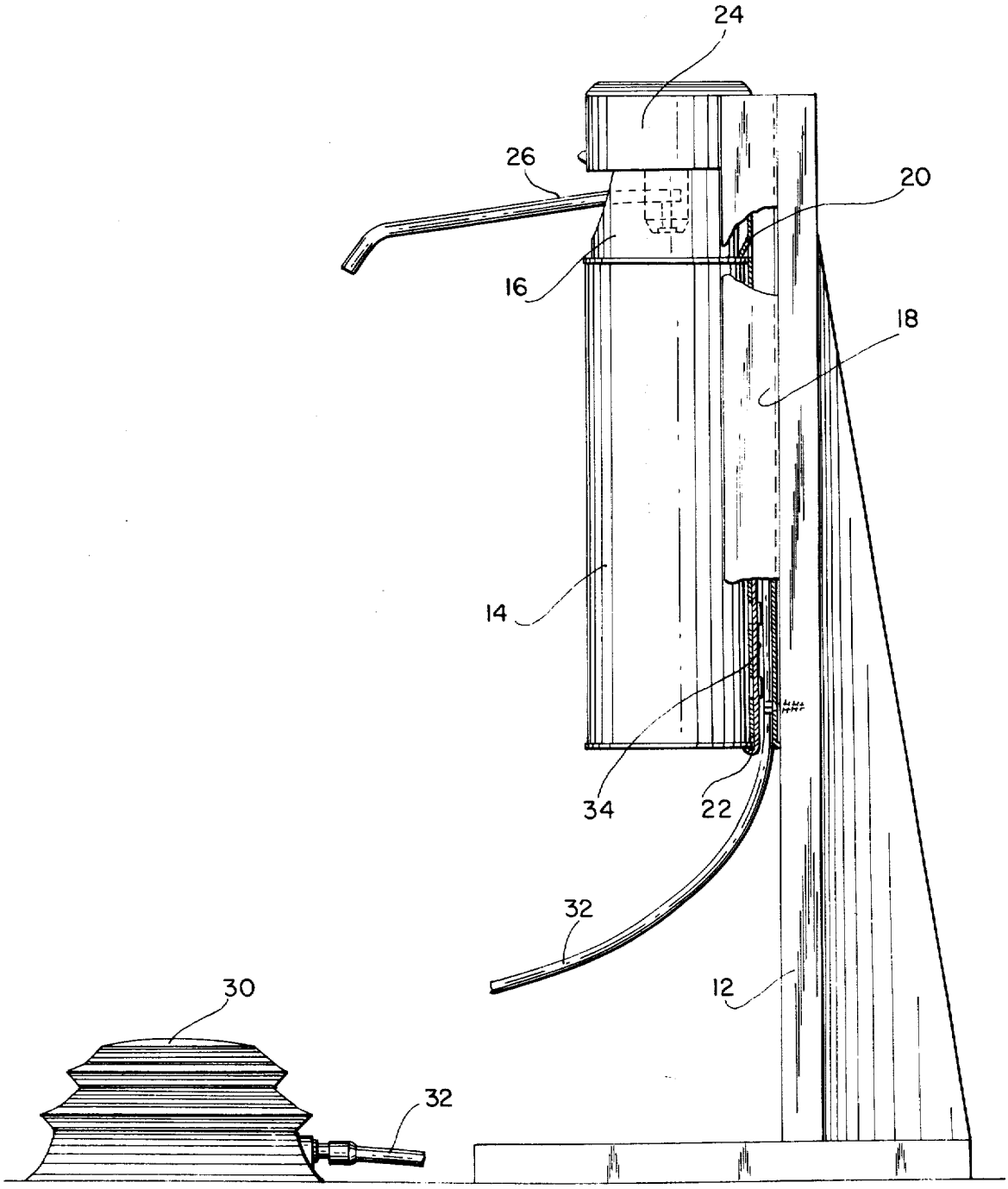


FIG. 3

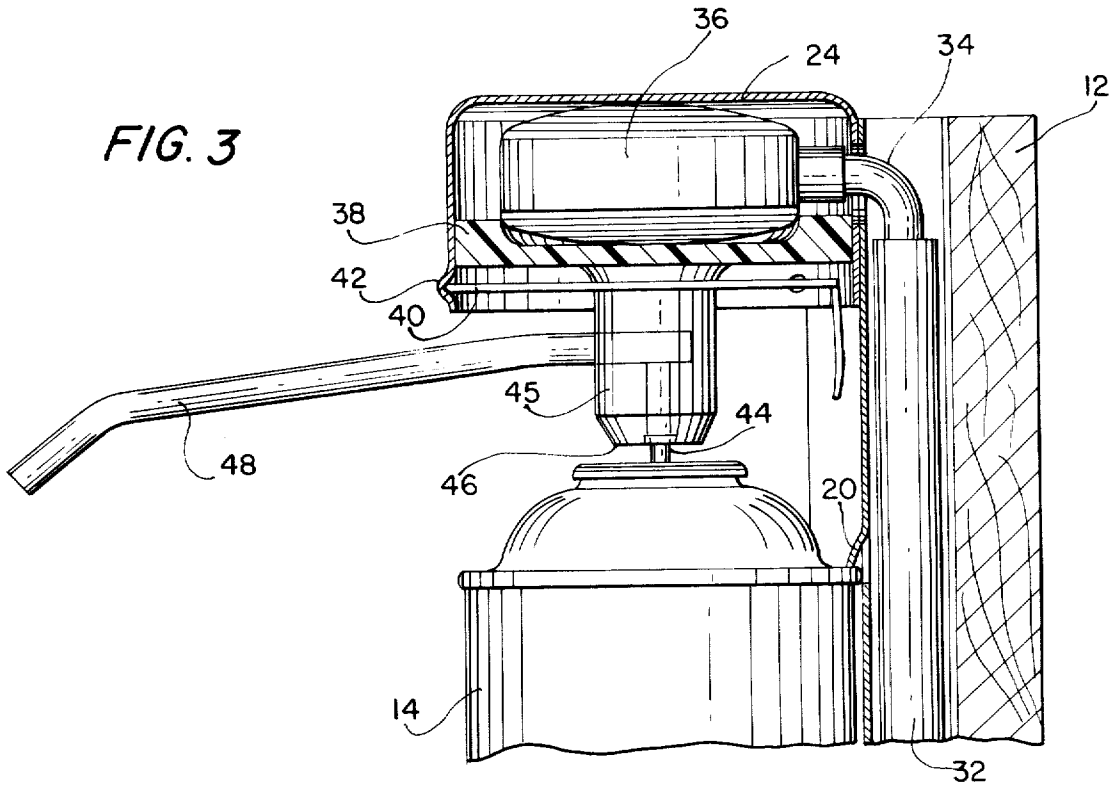

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FIG. 4

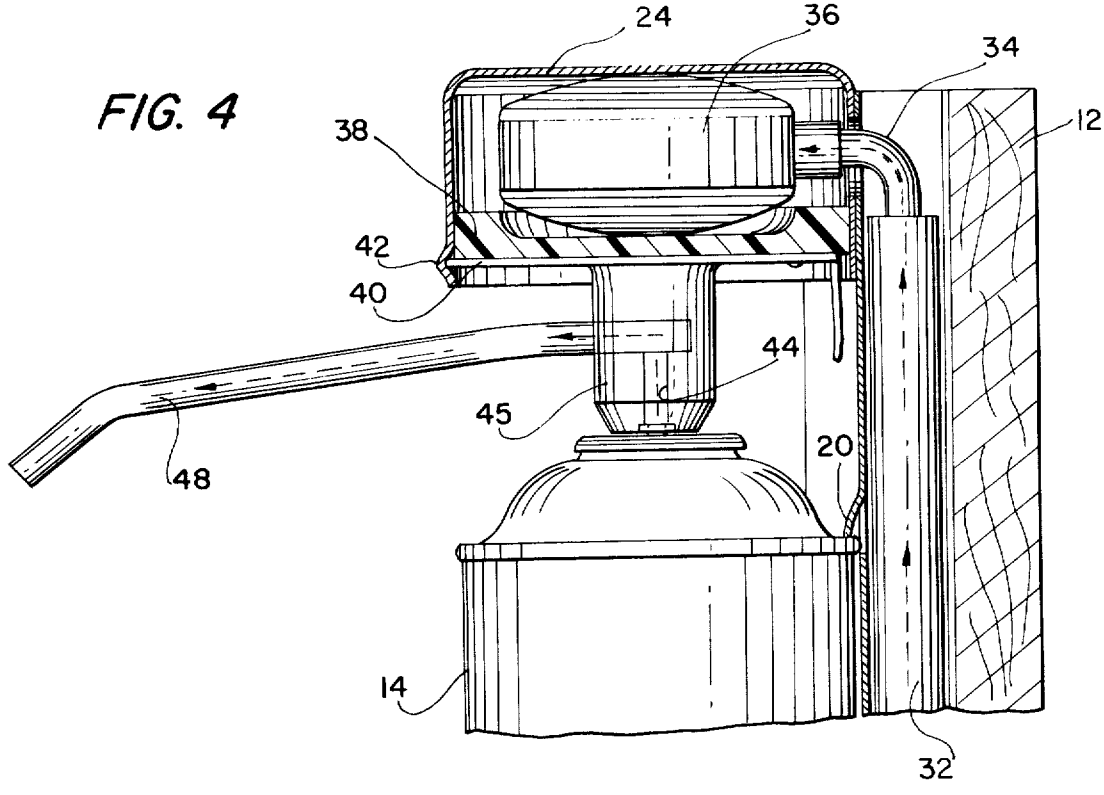
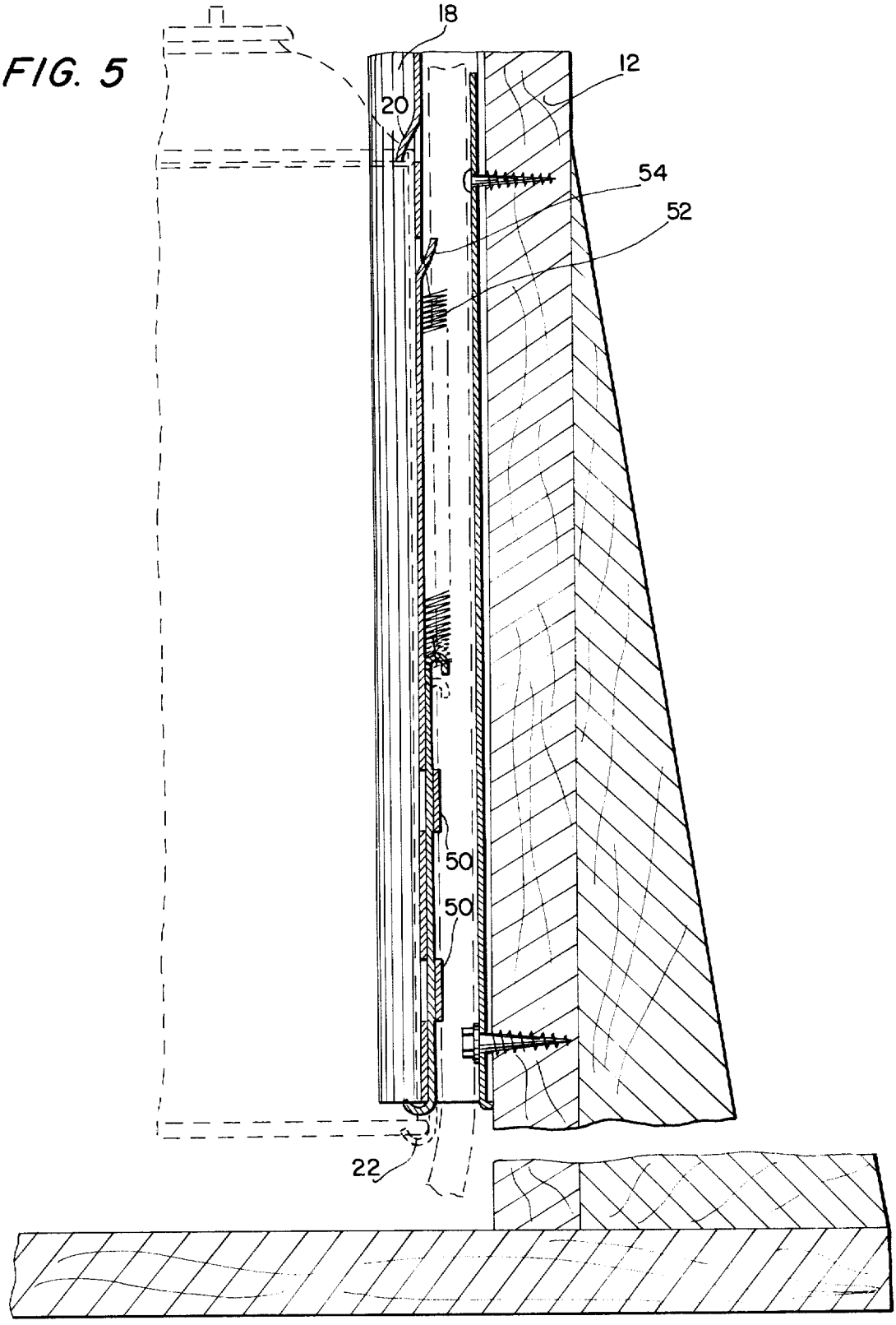

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FIG. 5



AUTOMATIC DISPENSER

This invention relates to an automatic dispenser which may be foot operated. More particularly, the present invention relates to an automatic dispenser which by means of a foot-operated pneumatic pump acturates an expandable diaphram which forces a dispensing nozzle engaging plate onto the exit spout of an aerosol container. The present device has special utility in dispensing antiseptic compositions in medical environments and thereby avoids hand contact and bacterial contamination by operating personal.

Numerous devices are known to the art for dispensing various materials from aerosol containers. Typically, these devices are hand operated and relatively complex. It is well known that a long need has been experienced by this art for a simple, highly efficient, foot operated dispenser which has utility such as in medical environments where hand contamination by bacteria must be kept to a minimum during and following a surgical scrub or for other applications in which hand activation to dispense from an aerosol container is undesirable inconvenient, or not feasible.

In the drawings:

FIG. **1** is a perspective view illustrating the device of the present invention.

FIG. **2** is a side elevational thereof.

FIG. **3** is a partial side view illustrating the operation of the present device in non-dispensing position.

FIG. **4** is a similar view to that of FIG. **3** except illustrating the device in dispensing position.

FIG. **5** is a partial side elevational view taken in section and illustrating means for supporting an aerosol container.

Referring to the figures wherein all similar elements are represented by the same numbers throughout the several views, FIG. **1** illustrates dispenser **10** which includes support **12**, or other wall surface as desired, aerosol container **14** with cap **16**, aerosol container support **18** having upper **20** and lower **22** gripping members. Housing **24** at the upper area of dispenser **10** includes a dispensing nozzle assembly **26** which is retained in position by removable wire spring **28**. The dispensing nozzle assembly **26** is in pneumatic communication with foot-operated pneumatic pump **30** by means of tubing **32**.

FIG. **2** illustrates the various elements of FIG. **1** as they appear in combination ready for dispensing. Channel **34** is provided within the back portion of aerosol container support **18** and provides a means for passing tubing **32** to the dispensing nozzle assembly **26** for operation thereof upon depression of foot-operated pneumatic pump **30**.

FIGS. **3** and **4** illustrate operation of the present dispenser except taken in partial perspective view and having cap **16** removed for purposes of discussion. In normal position, i.e., FIG. **3**, the pneumatic transmitting tubing **32** joines expandable diaphram **36** by elbow **34**. Dispensing nozzle engaging plate **38** having a cup-shaped configuration is retained in position within housing **24** by means of wire spring **40** which secures within notched section **42** and two similar notched sections near the rear and about the periphery of housing **24**. Alternatively, notched section **42** may be a horizontal angular groove around the perimeter of housing **24**.

In operation, FIG. **4**, pneumatic pressure via line **32** causes expandable diaphram **36** to expand into the cup-shaped configuration and while confined between non-movable surface of housing **24** and movable dispensing nozzle engaging plate **38**, causes the latter to move downwardly with projection **45** moving onto container valve stem **44** and limiting flange **46**. Depression of container valve stem **44** causes contents within aerosol container **14** to pass into connecting nozzle **48** from which it is discharged.

Housing **24** and removable wire spring **40** permits the dispensing nozzle assembly **26** consisting of elements **38, 45** and **48** which may be one or more separate parts, to swivel laterally in a horizontal arc for the convenience of the user and so that the dispensing spout may be swung out of the way when not needed. The socket at the center of **46** is made to a friction fit between the valve stem of the aerosol can and the piston. The upper face of this valve stem impinges upon the lower face of the socket to make a more complete seal when the diaphragm is expanded to dispense from the aerosol container. Downward pressure of **45** must overcome the pressure of the return spring inside the aersol can, causes the valve stem to rise, closes the internal valve in the aerosol can, and stops the flow from the aerosol container.

FIG. **5** illustrates how an aerosol container, in phantom, may be supported by support **18**. An upper edge of the container is retained by gripping member **20** while a lower edge of the container is retained by spring biased gripping member **22**. The latter member, i.e., **22**, is vertically adjustable within supports **50** and a wall surface of support **18**. Spring **52** connecting an upper flange of member **22** and a secured portion **54** of the support **18** provides the means for spring biasing member **22**. Although FIG. **5** illustrates a preferred mounting, alternative mountings are available and may be effectively used such as clamps, clips or related retaining devices to hold the aerosol container in vertical alignment.

The present device may be secured either to a self-supporting stand or otherwise to a wall surface by most any suitable means as desired.

The various elements of the present apparatus unless otherwise indicated, may be secured to adjoining elements by any suitable means such as bolts, welding, rivets or the like. In addition, auxiliary support or reinforcement members may also be included as part of the apparatus where required.

Although a preferred embodiment of the invention has been illustrated herein, it is to be understood that various changes and modifications may be made in the construction and arrangement of elements without departing from the spirit and scope of the invention as defined.

What is claimed is:

1. A dispenser which comprises in combination, a foot-operated pneumatic pump, an expandable diaphram, tubing connecting in fluid communication the foot-operated pneumatic pump and the expandable diaphram, a housing containing the expandable diaphram, a dispensing nozzle engaging plate having a cup-shaped upper configuration containing said diaphram within the housing and movably disposed relative to said diaphram, said housing having notched sections near a lower portion thereof, a wire spring engaging said notched sections and disposed to retain the dispensing nozzle engaging plate within the housing, said plate disposed in contact with an aerosol valve stem en-

gaging member having a passage to receive and dispense material exiting the aerosol valve stem, an aerosol container having an exit valve stem, said aerosol container removably secured to a support surface, the aerosol container being retained to said support surface by a spring biased, vertically disposed clamp having means engaging an upper rim and a lower rim portion of the aerosol container, whereby contents of the aerosol container are released by depressing the foot-

operated pneumatic pump and causing the diaphram to downwardly depress the valve stem by means of the dispensing nozzle engaging plate and the aerosol valve stem engaging member.

2. The dispenser of claim **1** wherein a cap is disposed between the upper portion of the aerosol container and the dispensing nozzle engaging plate.

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