

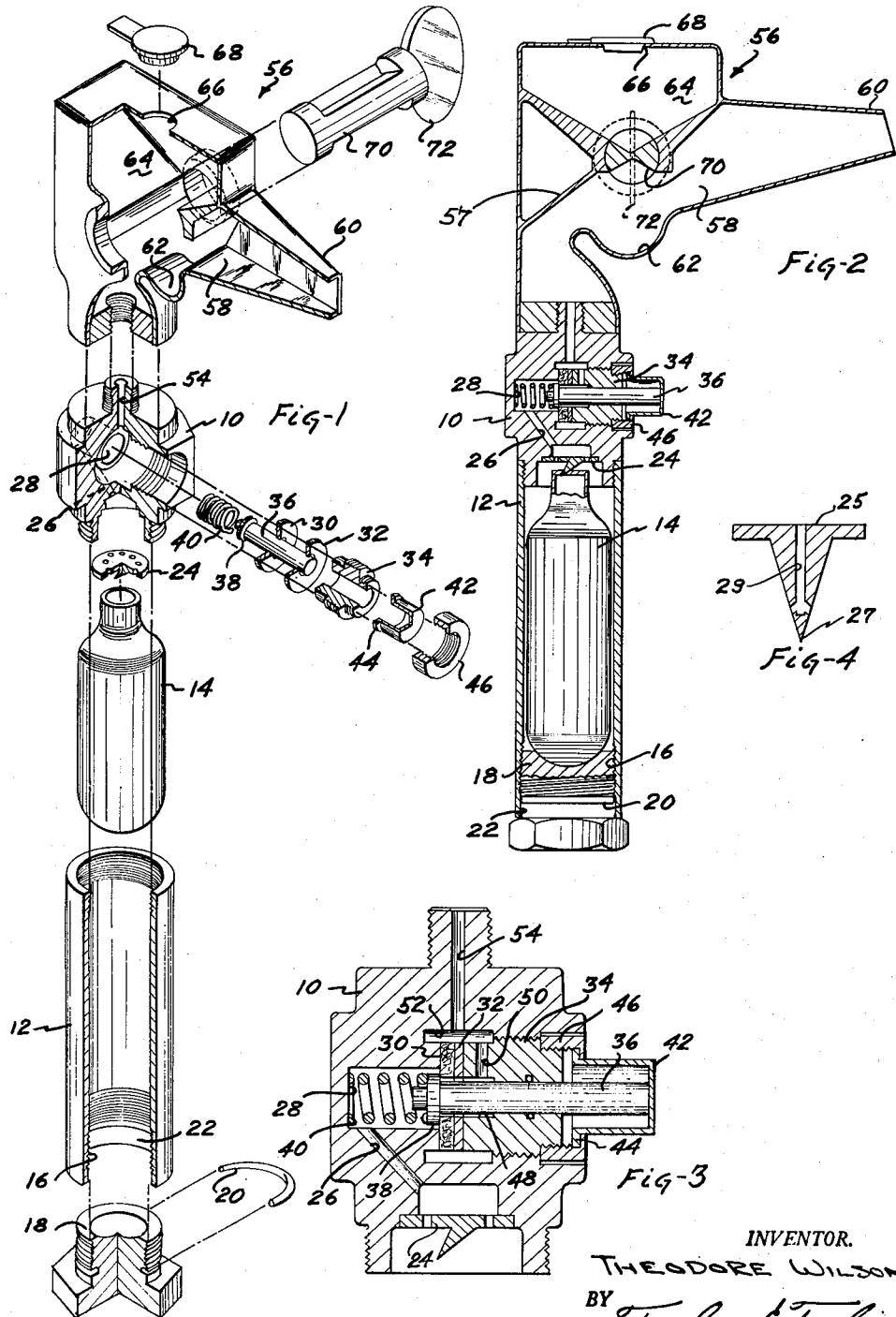
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T. WILSON

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MEDICINE DISPENSER

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INVENTOR.
THEODORE WILSON
BY *Toulmin & Toulmin*
ATTORNEYS

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MEDICINE DISPENSER

Theodore Wilson, Dayton, Ohio, assignor to Midland Pharmaceuticals, Inc., Dayton, Ohio, a corporation of Ohio

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This invention relates to a dispensing arrangement and is particularly concerned with a pressurized dispenser for powders or liquids or the like, especially such as might be concerned with medication.

Pressurized dispensers for powders or liquids are known but, insofar as I am aware, such devices heretofore have required pressurizing of the material being dispensed, and this involves special packaging problems and usually requires that the dispenser be discarded after the pressure has been entirely released therefrom.

The present invention relates to a method and apparatus for the pressure dispensing of materials in which the materials themselves are not pressurized and wherein a separate, easily obtainable pressure source is employed so that the dispensing unit does not have to be discarded after it has once been used.

Another object of this invention is the provision of a method and apparatus for the pressure dispensing of materials which is useful for bulk liquids and powders.

A still further object of this invention is the provision of an arrangement for dispensing liquids and powders in which the amount dispensed at any time can be carefully regulated.

These and other objects of the present invention will be more apparent upon reference to the following specification taken in connection with the accompanying drawings in which:

FIGURE 1 is an exploded perspective view showing a dispensing device according to my invention;

FIGURE 2 is a vertical sectional view through the dispensing device;

FIGURE 3 is a fragmentary sectional view showing in more detail the control valve of the dispensing device;

FIGURE 4 is a view showing a modified form which the piercing element of the device can take.

Referring to the drawings somewhat more in detail and which particular reference to FIGURES 1 and 2, the device according to my invention comprises a valve body 10 and sealingly connected thereto and extending therefrom is a tubular cylinder holder 12. This holder is adapted for receiving the bottle or capsule 14 containing a gasifiable substance under pressure; for example, carbon dioxide.

The lower end of tubular cylinder holder 12 is threaded at 16 for receiving plug 18 which is correspondingly threaded so that the capsule 14 can be retained within the tubular holder.

Plug 18 carries an O ring 20 that seals in the lower unthreaded portion 22 of the tubular holder.

Mounted in the bottom of the valve body 10 is a piercing disc 24 which is operable for piercing the end of capsule 14 when the capsule is placed in the tubular holder and plug 18 is threaded into place.

When the capsule is so punctured, pressure therefrom will pass through disc 24 into passage means 26 in the valve body and into chamber 28. This will best be seen in FIGURE 3. Chamber 28, at its right end, is closed by the apertured sealing disc 30 held in place by metal disc 32 which is, in turn, clamped in place by a valve stem guide 34 threaded into body 10.

Extended sealingly through guide member 34 is a valve stem 36 which has a valve head 38 adapted for sealingly engaging sealing disc 30 under the influence of spring 40 in chamber 28.

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At its right end, valve stem 36 extends outwardly from the valve body and projects into a cap 42 which has its inner end outwardly flanged at 44 and retained in place by the retainer ring 46 threaded to valve guide 34.

The described valve stem arrangement provides that the pressure will normally be trapped in chamber 28 but can be released by pressing on the button or cap 42. When this button or cap is pressed inwardly valve head 28 is moved away from disc 30 and pressure in chamber 28 can then enter passage 48 surrounding the left end of valve stem 36 and communicating by way of a radial passage 50 with chamber 52 in the valve body. This latter chamber communicates by a passage 54 with a head portion 56 mounted on the upper end of the dispenser.

The head portion 56 has a baffle 57 on a passage 58 into which passage 54 opens and which passage 58 terminates in a nozzle 60. In passage 58 is a small sump or well 62 for receiving the material to be dispensed by the dispenser. This material is delivered to the well or sump from a compartment 64 which has a filling opening 66 closed by a detachable cap 68. The bottom walls of compartment 64 slope downwardly and at the lowermost portion the walls are interrupted and receive a cylindrical valve member 70 which has a turning portion 72 on the outside of the head 56. This valve can be turned to close the bottom of the compartment, whereupon materials to be dispensed can be introduced into the compartment through opening 66 and then, upon turning of the valve, the material will drop into the well or sump 62. Thereafter, upon opening the valve of the dispenser, gas released from capsule 14 will be supplied to the head and in passing will pick up the material and convey it out through nozzle 60. Powders will be entrained in the gas and liquids will be atomized and picked up by the gas and conveyed through the nozzle.

The described arrangement has the advantage of being able to dispense either liquids or powders, and the material being dispensed can be handled in bulk and does not need to be pressurized. The amount of material to be dispensed at any time can be closely controlled and whenever the pressure of capsule 14 is exhausted, it can be readily replaced by another.

FIGURE 4 shows how the piercing plate can be constructed in a slightly different manner. In this view, the piercing plate has a conical point 27 with control passage 29 that runs from the top side of the member downwardly to adjacent the tip of the point so that when the capsule is pierced, the gas will readily flow through member 25.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions and, accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. In a dispenser for liquids and powders and the like; a valve body, a passage leading through said valve body, a valve member in the valve body movable for selectively opening said passage, a cylindrical portion attached to the valve body and extending therefrom and into which one end of said passage opens, means for sealingly mounting in said cylindrical portion a capsule containing gas under pressure and for connecting said capsule with said passage, a dispensing head connected to the valve body and having a conduit communicating at one end with the other end of said passage and terminating at the other end in a nozzle, a well portion in said conduit, a chamber in the dispensing head above the well, said chamber being adapted for receiving measured amounts of a liquid or powder or the like, and valve means in the bottom of the chamber operable for permitting the material in the chamber to drop therefrom into said well for being en-

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trained in the gas passing through the conduit when said valve member is actuated, said well having a convex bottom for receiving the liquid or powder, the bottom of said chamber forming a baffle plate which is at an angle of approximately 45° with the valve body to direct the gas from said passage on to the material in said well.

2. In a dispenser for liquids and powders and the like; a valve body, a passage leading through said valve body, a valve member in the valve body movable for selectively opening said passage, a cylindrical portion attached to the valve body and extending therefrom and into which one end of said passage opens, means for sealingly mounting in said cylindrical portion a capsule containing gas under pressure and for connecting said capsule with said passage, a dispensing head connected to the valve body and having a conduit communicating at one end with the other end of said passage and terminating at the other end in a nozzle which is at an angle of approximately 90° with the valve body, a well portion in said conduit, a chamber in the dispensing head above the well, said chamber being adapted for receiving measured amounts of a liquid or powder or the like, and valve means in the bottom of the chamber operable for permitting the material in the chamber to drop therefrom into said well for being entrained in the gas passing through the conduit when said valve member is actuated, said chamber having bottom walls sloping downwardly toward a position immediately above said well, and said valve means comprising a rotary valve element located in the lowermost part of the bottom wall of said chamber and immediately above said well, said well having a convex bottom for receiving the liquid or powder, the bottom of said chamber forming a baffle plate which is at an angle of approximately 45° with the valve body to direct the gas from said passage on to the material in said well.

3. In a dispenser; a valve body, a passage leading through said valve body, a valve seat in said passage, a valve member in said valve body normally engaging said seat and having an end projected from the valve body for manual operation of the valve element to disengage it from the seat and open said passage, a tubular projection extending from one side of said valve body and into which one end of said passage opens, piercing point means carried by the valve body whereby a capsule of gas under pressure can be placed in said tubular projection and pierced by said piercing point means thereby to supply gas under pressure to said passage, detachable means sealing the outer end of said tubular projection, a dispensing head mounted on said valve body and including a conduit into which the other end of said passage opens, said dispensing head comprising a nozzle to which said conduit leads, said conduit leading upwardly from said valve head and then generally hori-

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zontally, a well formed in the lower wall of said conduit in the said generally horizontal portion thereof, a compartment in the dispensing head immediately above said well portion for receiving measured quantities of material to be dispensed, valve means in the bottom wall of said compartment immediately over said well portion operable for dropping material from the compartment into the well portion, and said conduit comprising means between the well portion and the valve body for causing gas released from said passage to impinge on materials in said well portion so as to cause it to be entrained in gas passing through said conduit and to be conveyed thereby to said nozzle.

4. A pressurized dispenser for liquids and powders having a generally inverted L-shaped body comprising a dispensing head at the short leg of said body and a gas supply and valve means on the long leg of said body; said dispensing head comprising a loading compartment with top closure means, downwardly sloping bottom walls, and valve means at the bottom of said compartment; said valve means comprising a rotary valve element located in the lowermost part of said compartment and operable for dropping measured amounts of material from said compartment; a well below said valve; said well being of convex shape and being a part of a mixing passage connecting a discharge nozzle in said dispensing head with the gas supply means in said long leg; said mixing passage comprising a conduit leading upwardly from said gas supply in said long leg, a baffle plate attached to the lower side of said loading compartment and positioned at an angle to direct the gas released from said supply means to impinge upon materials in said well, and a generally horizontal conduit connecting said well with the discharge nozzle; said gas supply means in said long leg comprising a small first passage leading into said mixing passage, a valve body, a spring loaded valve for manual operation, piercing point means attached to said valve body, means in said long leg for supporting a capsule of gas under pressure, and a second small passage whereby after piercing said capsule with said point, gas under pressure is directed through the second passage, through said valve body, through said first passage and into said mixing passage.

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