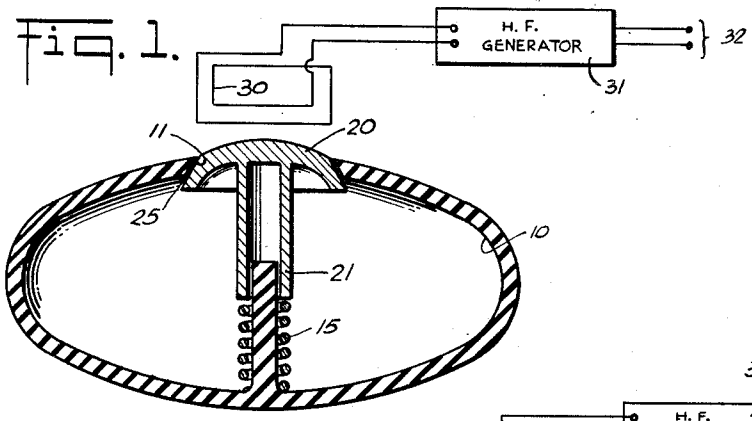
May 27, 1952 D. D. WHYTE 2,598,629

SEALED DISPENSING CONTAINER AND METHOD OF SEALING THE SAME

Filed June 3, 1949

Fig. 1.



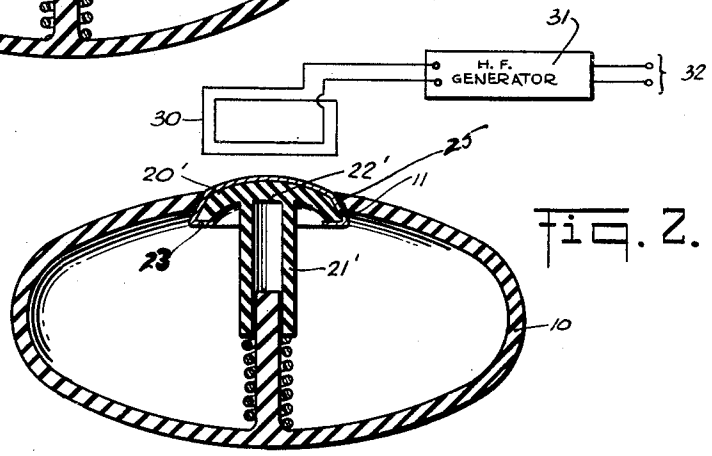


Fig. 2.

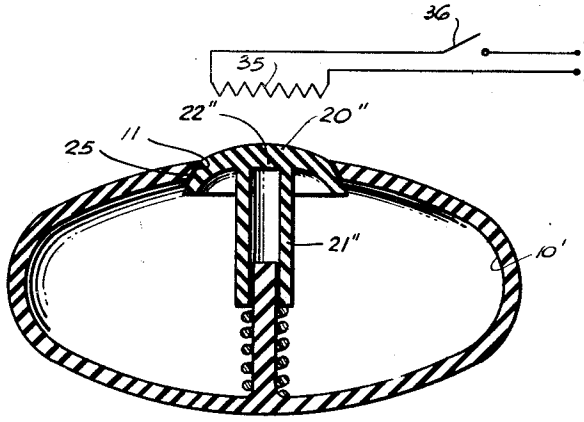


Fig. 3.

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Patented May 27, 1952

2,598,629

UNITED STATES PATENT OFFICE

2,598,629

SEALED DISPENSING CONTAINER AND METHOD OF SEALING THE SAME

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Application June 3, 1949, Serial No. 97,789

7 Claims. (Cl. 222—501)

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This invention relates to dispensing containers, and more particularly to such containers having a body member formed with a dispensing aperture normally closed by a spring biased valve.

Dispensers of this type are used for various purposes, such as for dispensing perfume or other odorants, liquid materials generally, and cleaning agents. One particular type of dispensing container is shaped like a bar of soap and is filled with a viscous soap mixture, wherein the soap mixture is released from the container by pressing inwardly on the valve.

It has been found that it is difficult to make a thoroughly effective seal between the valve and the edge of the aperture sufficient to prevent dehydration, contamination, or loss of contents particularly during storage or shipping of the container. In the specifically mentioned soap container, the contents, such as liquid soap, for example, are placed in the container at the factory and the container is sold in the full condition. If there is any leakage around the valve member, there is a corresponding loss of contents. Additionally, the exterior surface of the container does not have a pleasing appearance, due to the soiling thereof by leakage of contents.

In accordance with the present invention, the container and the valve member are made of materials having substantially different incipient fusion of softening temperatures. When the container has been filled, heat is applied to the assembly adjacent the valve member and the temperature of the assembly is raised to substantially the lower of the two fusion or softening temperatures. Under the influence of the spring pressed or biased valve member, the softened material tends to flow or be compressed into any crevices existing between the edge of the valve member and the edge of the aperture.

In a preferred form of the invention, the valve member is made of metal, the body of the container is made of a thermoplastic material, and the zone of the metal valve member is heated by an induction heating coil or the like, so that the temperature of its edges engaging the edges of the aperture is sufficient to effect a softening of the thermoplastic material of the body member. As the spring presses the valve member outwardly, a tight seal is formed between the valve member and the body member. When it is desired to use the dispensers, this frangible seal is easily broken by simply pressing inwardly on the valve member in the usual manner of using dispensers.

In another embodiment of the invention, the

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body of the valve member is made of plastic and a metal cover is placed over the head of the valve member, with this metal cover being heated to effect the softening of the container body material. Alternatively, both body member and the valve member may be made of thermoplastic materials of different softening temperatures, so that the same sealing effect is obtained by heating the assembly to substantially the lower of the two fusion temperatures.

With the foregoing in mind, it is an object of the present invention to provide a novel method of sealing a dispensing container.

Another object is to provide a novel method of sealing a dispensing container in which a body member and a dispensing valve member are made of materials having substantially different fusion or softening temperatures and the assembly is heated to the lower of the two temperatures to effect a softening of portions to cause one member to flow into and seal crevices between the two members.

A further object is to provide a novel dispensing container having a dispensing valve and a frangible seal between the valve and the remainder of the container.

These, and other objects, advantages and novel features of the invention will be apparent from the following description and the accompanying drawing.

In the drawing:

Fig. 1 is a transverse sectional view through one form of container embodying the invention, diagrammatically illustrating the method of sealing the container;

Figs. 2 and 3 are views similar to Fig. 1 illustrating alternative embodiments of the invention.

Referring to Fig. 1, the container may comprise a generally hollow body member shaped, for example, to fit the hand of a user and having a dispensing aperture 11 in one of its walls. The other wall of the container is formed with a projecting post or the like 12 substantially centrally aligned with aperture 11. Post 12 acts as a guide for the cylindrical stem 21 of a dispensing valve 20. Valve 20 has a head 22 with side edges 23 sloped to engage correspondingly shaped edges of aperture 11 to close the aperture. A spring 15 biases valve 20 to the aperture closing position.

In accordance with the present invention, the body member 10 of Fig. 1 is made of a suitable thermoplastic composition material and valve member 20 is formed of metal. After the container has been filled with the material to be

dispensed, the zone of the valve member 20 is selectively heated to substantially the fusion or softening temperature of the material of body member 10. Thereby, the edges of aperture 11 soften and flow into any gaps or crevices between the body and valve members to form a frangible seal 25 preventing loss of material from within body member 10. In the arrangement shown, this heating is accomplished by an induction heating coil or the like 30 which is placed in operative relation to body member 10 and supplied with high frequency currents from a high frequency generator 31 connected to a source of electric potential 32. The disclosed heating arrangement is illustrative only, and other methods of heating valve member 20 may be used.

The arrangement of Fig. 2 differs from that of Fig. 1 only in that the stem 21' and head 22' of valve member 20' are formed of a suitable thermoplastic material and a metal cap 23 is fitted over head 22'. Cap 23 engages the edge of aperture 11 and when heated by induction heating coil to substantially the softening temperature of the material of body member 10, effects a softening of the edges of the aperture to form the frangible seal 25 between the valve member and the body member.

In the arrangement of Fig. 3, valve member 20'' and body member 10' are both formed of a suitable plastic composition material. However, the plastic composition material of the body member has a substantially different fusion or softening temperature from that of the valve member. The heating arrangement, in this case, may comprise a heating resistor 35 connected by a switch 36 to a source of electric potential 37. The valve member and the body member are heated to the lower of the two fusion temperatures, so that one or the other of the two members will have its surface softened to flow and fill in gaps or crevices between the members.

The described arrangement provides a novel and efficient method of sealing a dispensing container, particularly during storage or shipping. The dispensing container has a frangible seal which is easily broken when it is desired to use the dispenser. Nevertheless, this seal is effective to prevent loss or contamination of contents of the dispensers during storage and shipping.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles thereto, it should be understood that the invention may be otherwise embodied without departing from such principles.

What is claimed is:

1. In a dispensing container having a body member formed with a dispensing aperture and an operating valve member disposed in operative relation to the aperture and normally closing such aperture, the method of tightly sealing such container which comprises making the body member and the valve member of materials having substantially different incipient fusion temperatures, and forming a frangible seal between the valve member and the body member by heating the assembly adjacent the valve and the aperture of the body member to substantially the lower of the incipient fusion temperatures of the body member and valve member.

2. In a dispensing container having a body member formed with a dispensing aperture and an operating valve member disposed in operative relation to the aperture and normally closing such aperture, the method of tightly sealing such container which comprises making the body member of thermoplastic composition material and at least the aperture edge engaging portion of the valve member of metal, and forming a frangible seal between the members by heating the assembly adjacent the valve and the aperture of the body member to substantially the softening temperature of the thermoplastic composition material of the body member.

3. In a dispensing container having a body member formed with a dispensing aperture and an operating valve member disposed in operative relation to the aperture and normally closing such aperture, the method of tightly sealing such container, which comprises making one of said members of thermoplastic composition material and at least the engaging edge portion of the other member of metal, and forming a frangible seal between the valve member and the body member by heating the assembly adjacent the valve and the aperture of the body member to substantially the softening temperature of the thermoplastic composition material of said one member.

4. In a dispensing container having a body member formed with a dispensing aperture and a spring biased operating valve member disposed in operative relation to the aperture and normally closing such aperture, the method of tightly sealing such container which comprises making one of said members of thermoplastic composition material and the other member of metal, and forming a frangible seal between the valve member and the body member by heating the assembly adjacent the valve member and the aperture of the body member, while the valve is maintained in operative relation to the aperture for normally closing the same under the biasing action of its spring, to substantially the softening temperature of such composition material.

5. A dispensing container comprising, in combination, a hollow body member having a dispensing aperture in one wall and guide means projecting from the opposite wall toward the aperture, a valve member within the body member and formed to engage said guide means and the aperture, means biasing said valve member outwardly into closing relation with the aperture, the material of said members having different incipient fusion temperatures, and a frangible seal between said members formed from the member, the material of which has the lower incipient fusion temperature.

6. A dispensing container comprising, in combination, a hollow body member having a dispensing aperture in one wall and guide means projecting from the opposite wall toward the aperture, a valve member within the body member and formed to engage said guide means and the aperture, means biasing said valve member outwardly into closing relation with the aperture, one of said members being formed of thermoplastic composition material and at least the engaging edge portion of the other member being formed of metal, and a frangible seal between said members formed from the member of thermoplastic composition material.

7. A dispensing container comprising, in combination, a hollow body member of thermoplastic composition material having a dispensing aperture in one wall and guide means projecting from the opposite wall toward the aperture, a metal valve member within the body member and formed to engage said guide means and the aperture, means biasing said valve member outwardly

into closing relation with the aperture, and a frangible seal between said members formed from the composition material of the body member.

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