Feb. 22, 1966 W. LEIKA 3,236,420

DISPENSER FOR DISPENSING PRODUCT AT CONDITIONED TEMPERATURES

Filed June 20, 1963 2 Sheets-Sheet 1

Fig. 1

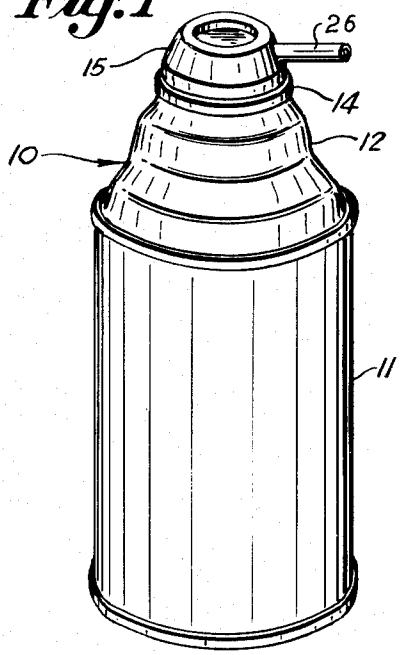


Fig. 2

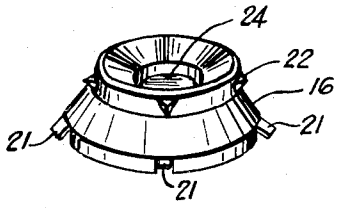


Fig. 3

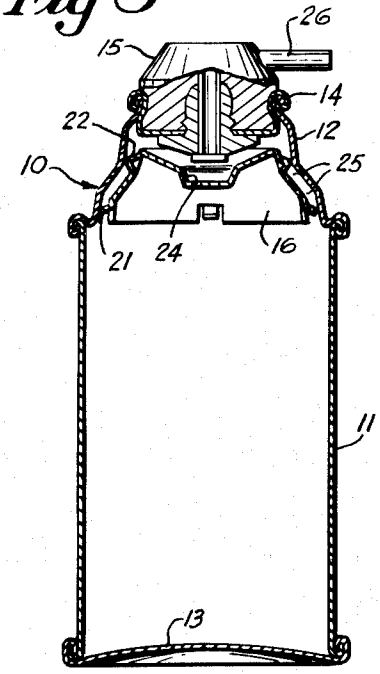
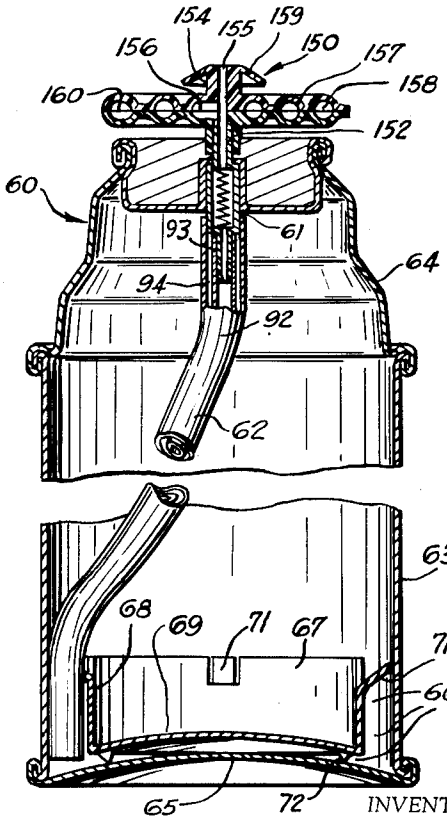


Fig. 4



INVENTOR.
WALTER LEIKA
BY
Richards & Geier
ATTORNEYS

Feb. 22, 1966 W. LEIKA 3,236,420

DISPENSER FOR DISPENSING PRODUCT AT CONDITIONED TEMPERATURES

Filed June 20, 1963 2 Sheets-Sheet 2

Fig. 6

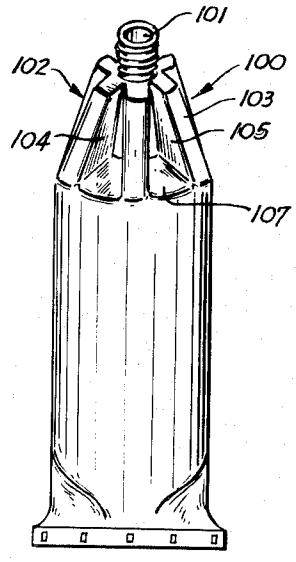


Fig. 9

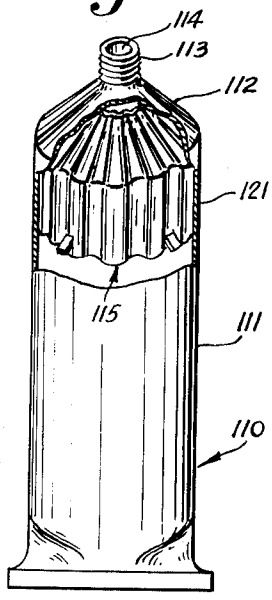


Fig. 8

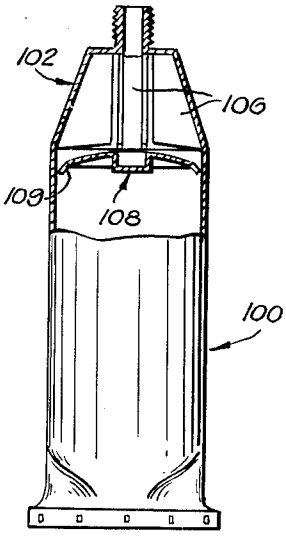


Fig. 5

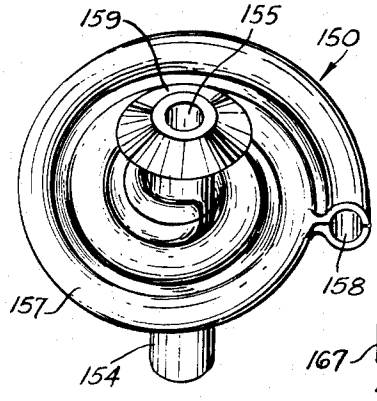


Fig. 10

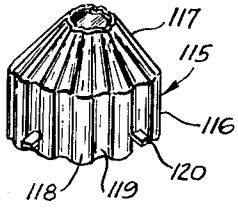
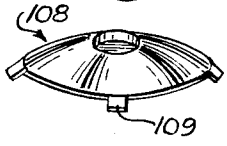


Fig. 7



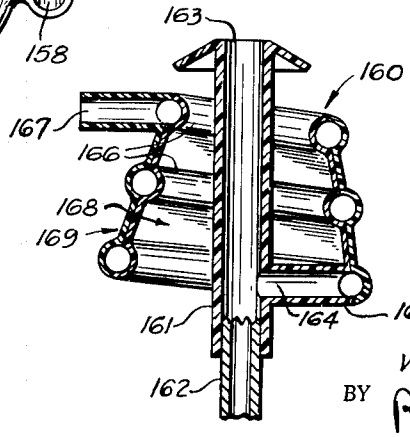


Fig. 5a

INVENTOR.
WALTER LEIKA
BY Richards & Geier
ATTORNEYS

United States Patent Office

3,236,420

Patented Feb. 22, 1966

3,236,420

DISPENSER FOR DISPENSING PRODUCT AT CONDITIONED TEMPERATURES

Walter Leika, Brooklyn, N.Y.
(26—22 30th St., Astoria, N.Y. 11102)

Filed June 20, 1963, Ser. No. 289,200
5 Claims. (Cl. 222—146)

This invention relates generally to dispensers of the aerosol and squeezable tube types, and refers more particularly to constructional features in these dispensers which permit temperature conditoned product to be dispensed therefrom.

It is a common practice to package many commercial products such as medicants, make-up, shaving cream, food, etc. in aerosol type dispensers and squeezable or deformable tubes. In general, the product is dispensed and used by the user at ambient temperature. On occasion, however, it is preferable that the product be used at other than ambient temperatures. For example, shaving cream is generally more effectively used for shaving if it is pre-heated. In the prior art, devices have been devised for heating product as it leaves the dispenser. These devices, however, are bulky in size and complicated to use. In addition, they do not provide for uniform temperature conditioning of the product.

It is, therefore, the primary object of the present invention to provide a dispenser for dispensing product at conditioned temperatures.

Another object is to provide a dispenser for dispensing product at conditioned temperatures wherein the product may be rapidly temperature conditioned within the dispenser and before actual discharge therefrom.

Still another object is to provide a dispenser wherein the mass of product being temperature conditioned is conditioned uniformly.

A further object is to provide a dispenser construction for dispensing product at conditioned temperatures which is particularly suited for application to dispensers of the aerosol type as well as to dispensers of the squeezable or collapsible tube type.

Another object is to provide a dispenser for dispensing product at conditioned temperatures which is simple to make and inexpensive in cost.

Other objects of the present invention will become apparent in the course of the following specification.

In achieving the aforementioned objectives of the present invention, it was found advantageous to provide an aerosol type dispenser with a specially shaped thin-walled insert located within the dispenser near the top or bottom (depending on whether or not the aerosol dispenser employs a dip tube) and spaced from the inner surfaces of the dispenser body so as to establish therein a temperature conditioning chamber of small volume wherein product may be heated or cooled. In use, a heating or cooling medium as, for example, hot or cold water is applied directly to the outside of the dispenser body in the region of the temperature conditioning chamber. Heat transfer between the body and the product in the case of a heating, or the converse in the case of cooling will occur conditioning the product in the temperature conditioning chamber. The product in a temperature conditioned state may then be dispensed by manipulating the dispenser valve mechanism.

According to the invention, squeezable type tubes may also be provided with temperature conditioning chambers. This may generally be accomplished by giving the tube, adjacent its closable end, a special shape by means of which one or more small temperature conditioning chambers are formed in the tube. It is also possible to utilize an insert located within the tube near the specially shaped

end which cooperates therewith in forming the temperature conditioning chambers.

The invention will appear more clearly from the following detailed description when taken in conjunction with the accompanying drawings showing, by way of example, the preferred embodiments of the inventive concept.

In the drawings:

FIGURE 1 is a perspective view of an aerosol type dispenser constructed in accordance with the principles of the present invention.

FIGURE 2 is a perspective view of an insert which is located within the body of the dispenser shown in FIGURE 1 for establishing a temperature conditioning chamber therein.

FIGURE 3 is a vertical central sectional view of the dispenser illustrated in FIGURE 1 showing the insert of FIGURE 2 in its operative position within the dispenser.

FIGURE 4 is a vertical central sectional view of a different form of aerosol dispenser which employs a dip tube and which is provided with a temperature conditioning chamber through the use of a special insert located at the bottom of the dispenser, the dispenser being further provided with a special dispensing tip, parts being shown broken away.

FIGURE 5 is a perspective view of the dispensing tip used on the dispenser illustrated in FIGURE 4.

FIGURE *5a* is a vertical central sectional view of another embodiment of dispensing tip which may be used on the dispenser illustrated in FIGURE 4.

FIGURE 6 is a perspective view of a squeezable tube type dispenser having temperature conditioning chambers and constructed in accordance with the principles of the present invention.

FIGURE 7 is a perspective view of a disc type insert which may be used in conjunction with the tube dispenser shown in FIGURE 6 for establishing temperature conditioning chambers therein.

FIGURE 8 is an elevational view partly in section of the tube dispenser shown in FIGURE 6 illustrating the arrangement therein of the disc insert shown in FIGURE 7.

FIGURE 9 is a perspective view of another form of squeezable tube dispenser having temperature conditioning chambers, a portion being broken away to illustrate the location of the special insert employed therewith.

FIGURE 10 is a perspective view of the insert used in the tube dispenser of FIGURE 9.

Throughout the specification like reference numerals are used to indicate like parts.

Referring now in detail to the dispenser **10** shown in FIGURES 1 to 3 of the drawings, the dispenser **10** comprises a shell which has a hollow cylindrically-shaped body **11** and a hollow inwardly curved top **12** which may be stepped as shown in FIGURE 3. The shell is also provided with a concave bottom **13** and the top **12** is provided with a collar **14**. The dispenser includes a dispensing valve mechanism **15** which is supported in collar **14**. This construction is generally that of known art aerosol type dispensers. For this reason, it should be obvious to those skilled in the art that the valve mechanism **15** may be sealed within the collar **14** in a number of ways, and that the shell may be constructed as shown or as a drawn one-piece unit from any suitable material such as tinplate, aluminum, etc.

FIGURE 2 illustrates an insert **16** which is supported within the shell of the dispenser **10** as shown in FIGURE 3. The insert **16** comprises a hollow member which has the generally curved shape shown, its diameter decreasing from bottom to top so as to follow and conform with the inner shape of the top **12** of the dispenser as shown in FIGURE 3. The insert **16** is made with a plain surface

following that of head 12 and is provided at the bottom with a number of tabs 21 which engage the inner surfaces of the dispenser shell and act to hold the insert up in the head 12 of the jacket as shown (FIG. 3). The insert is also provided near the top with a number of outstanding projections 22 which are used to maintain the insert in uniformly spaced relation with the inner surfaces of the shell. The insert 16 is also provided at the top with a recessed portion 24 to provide clearance under the bottom of the dispensing valve mechanism 15 as shown in FIGURE 3 to insure that flow thereto is unencumbered when dispensing of the product takes place.

As seen in FIGURE 3, the insert 16 is positioned inside the shell of the dispenser 10 in the top portion 12 and is maintained in uniformly spaced relation with the inner surfaces of the shell. The space between the insert and the inner surfaces of the shell thus forms a small volume temperature conditioning chamber 25 wherein the product contained in the dispenser may according to the intended use, have its temperature changed by heating or cooling the product through means of an outside heating or cooling agency (not shown).

In operation:

The aerosol type dispenser 10 shown in FIGURE 3 is of the type which in normal use has to be inverted to permit a dispensing of product therefrom. When it is desired to dispense temperature conditioned product from dispenser 10, the user will first invert the dispenser 10 to cause the product contained therein to flow into the top portion 12 of the dispenser jacket. The product will fill the hollow interior of insert 16, and it will also fill the temperature conditioning chamber 25 which extends around the periphery of the insert. A temperature conditioning agency, as for example, hot or cold water is then applied to the top portion 12 of the dispenser shell. In the case of a heating, the hot water will heat the top portion 12 and heat will be transferred therefrom to the product in the temperature conditioning chamber; in the case of a cooling, the converse will be true. After a predetermined time, the temperature conditioning agency is removed and the valve mechanism 15 manipulated to permit the temperature conditioned product to flow from chamber 25 into the valve mechanism, the product being dispensed through valve spout 26. Since the spacing between the insert 16 and the inner surfaces of the shell is uniform, the temperature condition of the product in chamber 25 will be uniformly effected.

It should be apparent, that the shape of the insert should generally follow the shape of the top of the dispenser. Thus, if the top of the dispenser was frusto-conical in shape, the insert would preferably be frusto-conical. It is also possible to provide a corrugated surface on the insert. That is, the insert may have a series of ribs and grooves extending around its circumference, the ribs and grooves being directed from top to bottom. In this way, the insert would actually form a plurality of temperature conditioning chambers in the top of the dispenser.

FIGURE 4 illustrates an aersosol type dispenser 60 in which the dispenser in use remains upright for dispensing and the product, which is normally collected at the bottom of the dispenser, is forced upwardly by gas pressure towards the dispensing valve mechanism 61 through a dip tube 62. As seen in FIGURE 4, the dispenser shell has a hollow cylindrically-shaped body 63 and a hollow inwardly curved top 64 and a convex bottom 65. In this type of dispenser, it is necessary to locate the temperature conditioning chamber 66 at the bottom of the dispenser. For this purpose insert 67 illustrated in FIGURE 4 is used. The insert 67 has a hollow cylindrical body 68 with a concave-shaped, dome-like bottom piece 69. The insert thus conforms in shape to the shape of the inner surfaces of the dispenser at the bottom. Dip tube 62 is preferably led to one side of the insert 67 as shown in FIGURE 4. The insert 67 has tabs 71 for holding it in position at the bottom of the dispenser shell and outstanding projections 72 which maintain the bottom piece 69 spaced a distance above the bottom 65 of the dispenser. In use, product normally fills the temperature conditioning chamber 66. Thus when it is desired to temperature condition it prior to dispensing, the heating or cooling agency is applied to the bottom of the dispenser shell in the same manner as was previously described. As shown in FIGURE 4, the dip tube 62 is made with a jacketed construction to limit heat transfer to and from the product as it is forced up therethrough during dispensing. The dip tube has an outer lining or jacket 92 which encloses the inner lining or jacket 93 with a void 94 therebetween being used to create a heat transfer barrier to prevent the product from being effected temperature wise on its flow up through the dip tube.

Referring to FIGURES 4 and 5, the dispensing tip 150 illustrated therein is intended to be used with dispenser 60 from which product is discharged by pushing down on the nozzle 152 thereby causing the valve mechanism 61 to open. The dispensing tip is intended to aid in maintaining heat transfer to and from the product during dispensing at a minimum. Thus, the dispensing tip may be heated or cooled as the case may be in the same manner as the product is conditioned in chamber 66. In this manner, the product passing through the temperature conditioned dispensing tip during dispensing will have its temperatures substantially unaffected.

The dispensing tip 150 has a central body 154 which is cylindrical in shape and is hollow. It fits over the nozzle 152 on the aerosol dispenser. The central body 154 is provided with an opening 155 at the top and an opening 156 at the side. The opening 156 communicates with a spiral tube 157 coiled around the central body in several loops as shown in FIGURE 5 the loops being in planar alignment. The terminal end of the hollow tube 157 is provided with opening 158 wherefrom the temperature conditioned product is dispensed. The central body 154 is also provided at the top with a conical skirt 159, for decorative purposes, etc. In practice it was found advantageous to make the dispensing tip of plastic and mould it in two halves, an upper piece and a lower piece, and then join them along the central seam 160. In this manner the tip is made in the simplest and cheapest way.

In use, the dispensing tip 150 is inserted over nozzle 152 as shown in FIGURE 4. Then, assuming that the product in dispenser 60 has been conditioned as heretofore described, and assuming that the tip 150 has been heated or cooled by the same agency used for effecting a conditioning of the product in the dispenser, the user merely places one finger over the opening 155 in the tip 150. He then pushes down on the tip 150, and hence on the nozzle 152, and product will flow through the nozzle, into the central cavity of the tip. It cannot flow out opening 155 so it will be directed through opening 156 into the spiral tube 157. As it passes through tube 157 its temperature will be substantially unaffected. When the user is finished with dispensing product, he merely releases his finger from opening 155. He can then clean residue of the product out of tube 157 by running some water through opening 155.

FIGURE 5*a* illustrates a somewhat different construction of dispensing tip 160. In this case, the dispensing tip 160 has a central hollow body 161 which fits over nozzle 162 on an aerosol dispenser (not shown). The central body is provided with an opening 163 at the top and a side opening 164. Side opening 164 is in communication with the lower branch 165 of a spiral tube 166 which is coiled around the central body in a number of loops of which decrease in diameter in the direction of the top of the dispensing tip. The dispensing tip 160 is used in the same manner as dispensing tip 150 except that the discharge from dispensing tip 160 is at the top by means of opening 167. It was found advantageous to make dispensing tip 160 in two parts, an inner cone portion 168 and an outer cone 169.

FIGURE 6 illustrates a squeezable type tube **100** in which product is dispensed therefrom by squeezing the tube to force the product out through neck opening **101**. This type of tube is generally used for packaging pastes and creams. The tube **100** is provided adjacent the neck opening with a series of inwardly tapering hollow ribs **102** which are arranged symmetrically around the opening. Each rib **102** has an outer end wall **103** and parallel spaced apart side walls **104** and **105** directed radially inwardly of the outer end wall **103**. The end wall and side walls of each rib thus enclose a space which constitutes a temperature conditioning chamber **106** (FIG. 8) so that tube **100** is actually provided with a plurality of temperature conditioning chambers. It was found advantageous to make the spacing between the parallel side walls **104** and **105** of each rib substantially equal to the diameter of neck opening **101**. The flat shoulders **107** extending between each rib **102** are arranged slightly inclined relatively to the longitudinal axis of tube **100**. The disc-shaped insert **108** illustrated in FIGURE 7 is used in conjunction with tube **100**. It is inserted in the tube before it is filled with product and sealed. The insert **108** is provided with tabs **109** for maintaining it within the tube in the position shown in FIGURE 8 wherein it is located just below the shoulder **107** on the tube. When it is desired to temperature condition product in the tube, the user squeezes the tube in the well known manner. This will force the product to flow into each rib **102**, this effect being assured by use of the insert **108** since the product can only flow past the insert at the circumferential periphery thereof. The product in each rib (or the temperature conditioning chamber constituted thereby) is then temperature conditioned by applying a temperature condition agency directly to the outside of the ribs in the same manner as previously described. Product in a temperature conditioned state may then be dispensed by the user removing the cap covering opening **101** (not shown) and further squeezing the tube.

FIGURE 9 illustrates a different form of squeezable tube construction wherein the tube **110** has a smooth main body **111** and a frusto-conical top **112** terminating in neck **113** which in turn is provided with an opening **114**. The insert **115** illustrated in FIGURE 10 is used with tube **110** being inserted and supported therein as shown in FIGURE 9. The insert **115** has a generally cylindrical lower body **116** and a frusto-conically shaped top body **117**. The surface of the insert is corrugated containing a series of crests **118** and grooves **119**. The insert **115** also has tabs **120** which hold it in place within the tube. In this construction, the insert generally conforms in shape to the inner surfaces of tube **110** adjacent the neck **113**. The crests **118** contact these inner surfaces of the tube so that the grooves **119** of the insert constitute with the inner tube surfaces, a plurality of temperature conditioning chambers. In use, product is forced into the grooves (which are the only flow channels from the inside of the tube communicating with opening **114**) and it is temperature conditioned therein in the same manner previously described, the temperature conditioning agency being applied directly to the outside of the tube adjacent the neck **113**.

The dispenser construction of the present invention provides dispensers which are particularly suited for use in dispensing a variety of viscous products such as medicants, shaving cream, lotions, foodstuffs, adhesives, etc. where it is desired to temperature condition the product before use. It offers the advantage that the dispensers are relatively cheap to make and simple to use. For example, the insert **16** shown in FIGURE 2 may be made as a one piece stamping, the projections **22** and tabs **21** therein being formed on the stamping in a simple, single operation. The dispenser construction of the present invention adapts itself to easy application of the temperature condition agency. For example, hot or cold water is easily applied to the dispenser in the region of the temperature conditioning chamber. There is thus little danger involved to the user and no chance that the product will be contaminated inasmuch as it is conditioned while still in the dispenser.

While there is above disclosed but some embodiments of dispenser construction, it is possible to produce still other embodiments without departing from the scope of the inventive concept herein disclosed.

What is claimed is:

1. An aerosol dispenser for dispensing viscous products and the like at conditioned temperatures, said dispenser comprising a hollow elongated shell having a generally cylindrically-shaped main body, a top portion firmly connected with said main body and comprising concentric inwardly curving sections of decreasing diameter, said top portion terminating in a concentric opening at one end of said shell, a bottom piece firmly connected with and enclosing the other end of said shell, dispensing valve means supported in the opening at the first-mentioned end of said shell for dispensing product therefrom, and a hollow insert supported within the top portion of said shell, said insert having a body comprised of concentrically arranged inwardly tapering sections of decreasing diameter conforming in shape to the shape of the top portion of said shell and being uniformly spaced from the inner surfaces of said top portion whereby said insert and the inner surfaces of said top portion cooperate to form a temperature conditioning chamber in said shell.

2. An aerosol dispenser in accordance with claim **1** wherein said insert is provided with tab pieces firmly connected with and extending radially outwardly from the bottom thereof for engaging the inner surfaces of the top portion of said shell for supporting said insert in said shell, and upstanding projections firmly converted with said inside adjacent the upper edge thereof for maintaining said insert in uniform spaced relation with said top portion.

3. An aerosol dispenser for dispensing viscous products and the like at conditioned temperatures, said dispenser comprising a hollow elongated shell having a generally cylindrically-shaped main body, a top portion firmly connected with said main body and comprising concentric inwardly curving sections of decreasing diameter, said top portion terminating in a concentric opening at one end of said shell, a concave bottom piece firmly connected with and enclosing the other end of said shell, dispensing valve means supported in the opening at the first-mentioned end of said shell for dispensing product therefrom, said dispensing valve means including a dip tube extending to the bottom of said shell, and a hollow insert supported concentrically within said shell near the bottom, said insert having a cylindrically shaped body and a concave bottom firmly connected with said body, said concave bottom being spaced a distance above the bottom piece of said shell, whereby said insert and the inner surfaces of said shell cooperate to form a temperature conditioning chamber at the bottom of said shell.

4. A dispenser in accordance with claim **3** wherein said dip tube has an inner jacket, and an outer jacket enclosing said inner jacket and being spaced therefrom, the space inbetween said inner and outer jackets comprising a void for decreasing heat transfer between said inner and outer jackets.

5. An aerosol dispenser for dispensing viscous products and the like at conditioned temperatures, said dispenser comprising a hollow elongated cylindrical shell, closed at the bottom end and open at the top end, a tapered cover closing the opening at the top, said cover having a discharge outlet, a dispensing valve mechanism in the outlet including a discharge spout, an inverted cup-shaped device fixedly installed in said tapered top cover, spaced tabs radiating from the bottom edge of the cup-shaped device and spaced projections extending outwardly of the cup-shaped device adjacent the top thereof, said tabs and projections maintaining the cup-shaped device spaced away

from the top cover providing chambers therebetween for conditioning the temperature of the contents of the shell.

References Cited by the Examiner

UNITED STATES PATENTS

1,760,773	5/1930	Penney	222—92 XR
2,477,200	7/1949	Penney	222—92
2,643,794	6/1953	Perkins	222—92
2,905,364	9/1959	Marraffino	222—564 XR
3,022,923	2/1962	Hoffman	222—387
3,081,764	3/1963	Martin	126—362
3,085,714	4/1963	Lighter	222—564
3,175,733	3/1965	Lerner	222—146

References Cited by the Applicant

UNITED STATES PATENTS

740,714	10/1903	Titus et al.
1,875,457	9/1932	Hemmingsen.
2,101,922	12/1937	Stoesling.
2,148,986	2/1939	Hoyt.
2,336,806	12/1943	Schenk et al.
2,658,796	11/1953	Kopperschmidt.
2,762,901	9/1956	Liedberg.
2,817,600	12/1957	Yahnke.
3,144,174	8/1964	Abplanalp.

RAPHAEL M. LUPO, *Primary Examiner.*