March 3, 1970 E. H. WILKINS 3,498,504

HEATED AEROSOL LATHER DISPENSER

Filed Nov. 15, 1968 2 Sheets-Sheet 1

FIG. 1.

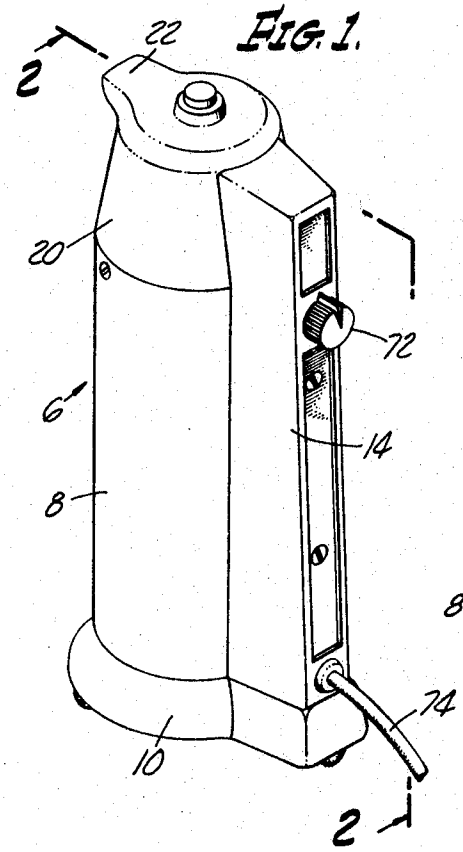
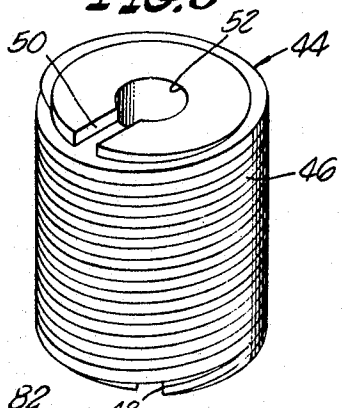


FIG. 3



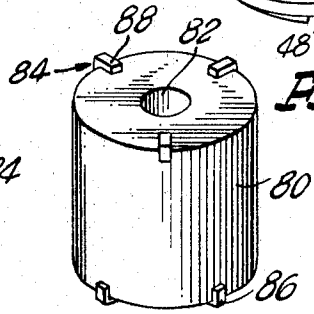


FIG. 6

FIG. 5.

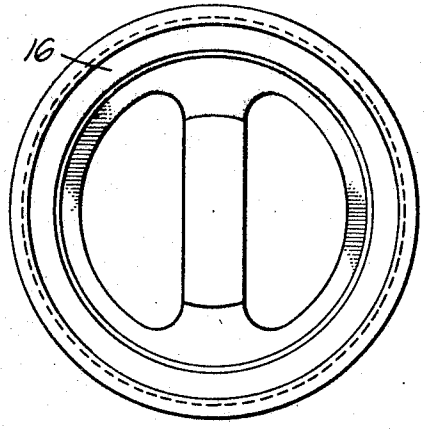
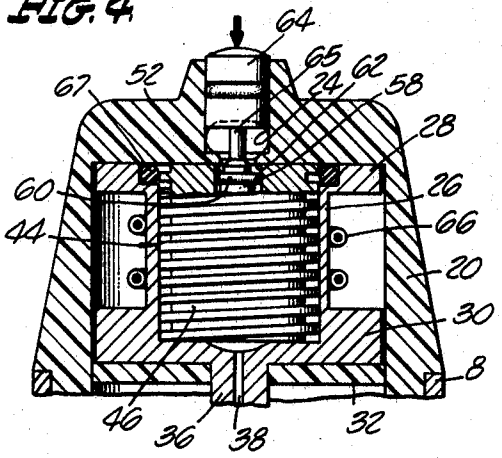


FIG. 4



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HEATED AEROSOL LATHER DISPENSER

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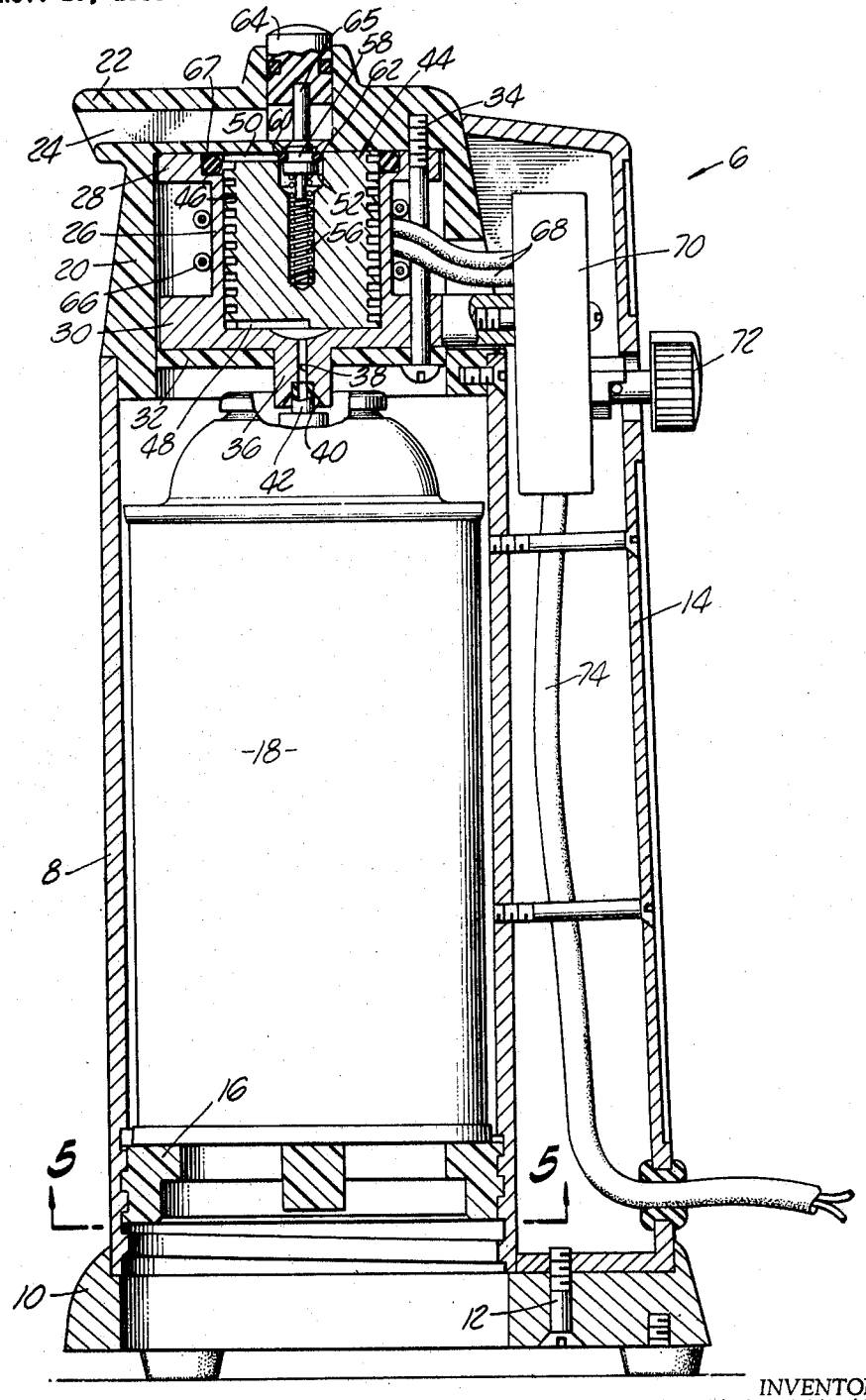


FIG. 2.

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HEATED AEROSOL LATHER DISPENSER

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Continuation-in-part of application Ser. No. 644,526, June 8, 1967. This application Nov. 15, 1968, Ser. No. 778,003

Int. Cl. B67d 5/62

U.S. Cl. 222—146 3 Claims

ABSTRACT OF THE DISCLOSURE

This is a dispenser for aerosol lathers such as shaving lathers. It has a support for an aerosol container which is maintained in flow communication with an electrically heated block defining a passage whose size is small compared to its length. The heating element is in heat transfer relationship to the electrically heated block and is constantly supplied with electrical current to maintain the block and the aerosol lather base in the conduit at a constant temperature at a degree which is warm to the face of the user but insufficient to break down or thin the aerosol lather base. The passage communicates through a valved outlet to a discharge spout. The valved outlet is in close heat exchange relationship to the electrically heated block. Means is provided for varying the constantly applied heat to suit the individual user.

CROSS-REFERENCES

This is a continuation-in-part of my application Ser. No. 644,526 filed June 8, 1967, now abandoned.

DISCLOSURE

A number of types of devices has been conceived for heating aerosol lathers, such as are used in shaving. Some of these prior devices included electrical heating elements for heating the lather as it flowed from the aerosol container. Others provided means for heating the container with hot water. The water heated type would heat only a very small quantity of the material at one time, and the degree of heating was unpredictable. It might not be warm enough to assist in softening one's whiskers, but it might become heated to such an extent that it would break down the bubble structure of the lather and liquefy it, making it impractical and ineffective as a shaving lather.

The electrical heating elements used in conjunction with aerosol lather containers had certain drawbacks. In some cases the lather base passage to be heated was of insufficient length to provide lather in a properly heated condition in any usable quantity. Also, the heating element was energized only preparatory to using the lather. This required applying such a high degree of heat that the lather structure broke down into a liquid and was therefore no longer a lather. While in some cases the passage to be heated was of capillary size in cross section, it was of insufficient length to accommodate any appreciable amount of lather base. In others, the conduit to be heated was too large in cross section so that the lather base flowing from the pressurized aerosol container would expand in the passage, resulting in the formation of and a cooling of the lather in the pasage and requiring the application of greater heat, resulting in breaking down of the lather. Furthermore, when the lather base is heated quickly in a short tube or conduit, it will form large bubbles and not expand to a relatively small bubble structure when it is introduced to the pressure of the atmosphere.

It is a general object of the invention to provide an aerosol lather dispenser wherein there is a heating passage

defined at least in part by a body of heat-retaining material which is constantly maintained heated by an electrical heating element. The heat is sufficient to be tolerated comfortably on the face of the user of the lather but insufficietn to break down or liquefy the lather structure. This cannot be accomplished from a practical standpoint wtih heat applied intermittently. To produce sufficient heat in a short time, the heat is too intense and the lather is broken down. If a lower degree of heat is applied, the user must wait an inconvenient length of time before the lather is slowly brought up to a desirable and comfortable degree of temperature.

Another object of the invention is to provide an aerosol lather dispenser with heating means wherein the passage to be heated is small in cross section but of considerable length so that as the lather passes through the passage it will be in the passage long enough to become heated, and wherein the outlet from the lather heating conduit is valved so that when the heated material flows from the dispenser, it expands in a normal manner and provides a considerably greater volume than it occupied in the heating passage. The lather that is left in the discharge end of the passage between uses is broken down into an unusable lather. But because of the small volume of the passage, the unusable amount is not noticed.

A further object of the invention is to provide a dispenser of the type described wherein heat is constantly applied but the areosol container is shielded from the heat and wherein the applied heat can be varied within limits to satisfy the desires of the individual user.

The above and other objects will more fully appear from the following description in connection with the accompanying drawings:

FIG. 1 is a perspective view of an embodiment of the invention;

FIG. 2 is a sectional view on an enlarged scale taken approximately on the line 2—2 of FIG. 1;

FIG. 3 is an enlarged perspective view of the heat retaining core and lather base channel formed therein;

FIG. 4 is an enlarged vertical sectional view through the upper portion of the dispenser;

FIG. 5 is a sectional view taken aproximately on the line 5—5 of FIG. 2;

FIG. 6 is a perspective view on a scale less than that of FIG. 3, of a modified form of heat retaining core.

There is illustrated a dispenser **6** having a casing **8** mounted on a base **10** by suitable bolts **12**. The casing **8** has an offset portion **14**. The bottom of said casing is open and internally threaded to removably receive a threaded closure **16**. When the closure **16** is removed, an aerosol container **18** of shaving lather or the like can be inserted in the casing and retained therein by the threaded closure **16**. The upper end of the casing **8** carries a head **20** which may be molded from a suitable plastic material, said head having a discharge spout **22** defining a discharge outlet **24**.

Located within the head **20** is a sleeve **26** having an upper positioning and securing flange **28** and a bottom positioning and securing flange **30**. Beneath the bottom flange **30** is a disc **32** of a suitable heat insulating material which lies above the aerosol container **18**. One or more bolts **34** extend through the insulating disc **32** and the flanges **28** and **30** of sleeve **26** and are anchored in the upper portion of the head **20**. The lower flange **30** has a downward central extension **36** with a passage **38** therein. The passage **38** is flared at its lower end as shown at **40**, said flared portion providing what might be termed a universal adaptor for closely engaging a depressible outlet valve **42** which conventionally is a part of the structure of the aerosol container **18**.

Within the sleeve **26** is a core or body **44** of a suitable heat retaining material, such as aluminum. The body **44** has a helical channel **46** formed on its side wall, said channel having an inlet **48** which is in flow communication with the passage **38** and the outlet valve **42** of the aerosol container. The upper end of the body **44** has an outlet channel **50** which communicates with the enlarged upper end of a bore **52**. In the reduced lower portion of said bore is a compression spring **56** which bears against a valve element **58** located in the upper enlarged portion of the bore and in close proximity to the outlet **50** of the helical conduit **46**. The valve head **58** has a seal, such as an O-ring **60**, which is adapted to seat against a valve seat **62** defining a port leading to the outlet passage **24** in the head **20**. The valve head **58** has a stem **65** on whose upper end is an actuating button **64**. A suitable seal **67** is provided between the uper end of the channeled body **44** and the inner portion of the flange **28** at the upper end of sleeve **26**.

The sleeve **26** forms a wall of the channel **46** to provide a conduit which is only open at its ends **50** and **58**. The sleeve **26** is relatively thin and about it an electrical conductor or heating element **66** is connected by conductors **68** through a rheostat **70** of suitable construction having an adjustment member **72** to vary the amount of heat supplied to the heating element **66**. An electrical supply conductor **74** extends downwardly through the offset casing portion **14** and outwardly therefrom to be connected to a suitable supply of electricity.

It will be noted that the channel or conduit **46** in the heat retaining core or body **44** is of quite small cross sectional extent relative to its length. A small amount of unusable lather that may be in the outlet end of the passage before pushing the button is broken down as will any lather that is exposed to heat for an hour or so. But when put to use, this small amount will not be noticed because of the small volume of the passage **46**. This is one of the important features of the invention, together with the location of the heating conduit **46** in a material which once heated can be maintained at a substantially constant heat.

By providing a heating conduit **46** of small cross section and quite considerable length, lather base flowing into the conduit from the aerosol container **18** will be quickly brought to the desired temperature without excessive heating due to the heat stored in the body or core **44**. It is therefore possible to dispense quantities of heated lather at frequent intervals as it is being applied to the face and still maintain the lather in its proper condition.

In an actual working embodiment of the invention, I have found that the heating conduit **46** with a cross sectional dimension of .058 square inch and a length of 26 inches is highly satisfactory in producing the stated results. It should be understood that it is possible to vary these dimensions and achieve the results satisfactorily.

As stated in the objects, the degree of heat imparted to the core or body **44** is such that it will heat lather base in the conduit **46** at a temperature, which when dispensed in lather form, will feel warm to the skin of the face and assist in softening whiskers prior to shaving. The lather base in the conduit **46** is actually somewhat warmer than is its temperature when applied to the face because the aerosol lather will undergo a degree of expansion when it issues past the valve **28** and into the dispensing conduit **24** with a certain degree of resultant cooling. However, the lather temperature in the conduit **46** must be maintained lower than a temperature which would cause the lather to liquefy when it is dispensed.

The heat retaining body **44** is of relatively large size compared to the cross sectional extent of the passage **46** to permit said passage **46** to be made quite long so that the lather base as it passes through the passage, will be in the passage long enough to heat, and will still be warm. Furthermore, because of the length of the heating conduit

46, additional supplies of lather base will issue from the aerosol container **18** into the lower portion of said conduit as lather is dispensed from upper portions thereof. By the time the newly admitted lather base reaches the upper end portions of the channel **46**, it has become heated to the desired degree.

When the container is mounted in the dispenser as shown in FIG. 2, and the bottom plug **16** is turned into place, the container dispensing valve **42** is held in a depressed or open position by the projection **36** on the bottom flange **12** on the sleeve **26**. Consequently, the lather base in the heating conduit **46** and up to the dispensing valve **56**, is maintained under the same pressure as that in the aerosol container **18**, and freedom of the lather base to atmospheric pressure with its resulting expansion does not occur until it reaches the dispensing passage in the spout **22**.

In FIG. 6 there is shown a heat sink or body of heat retaining material **80** which may be of any desired material, preferably a metal, such as aluminum. It has a bore or recess **82** similar to the bore **52** in the member **44**. However, the heat sink **80** has a smooth side wall and does not contain the spiral channel or groove **46** which is provided on the body **44**. The heat sink **80** is adapted to closely fit in the sleeve **26** in place of the heat retaining body or heat sink **44** shown in FIGS. 3 and 4.

In order to maintain spacing of the heat sink **80** from the inner wall of the sleeve **26**, I provide lugs **84** which extend outwardly from the side wall longitudinally beyond the end walls of the heat sink. The portions **86** which extend outwardly from the side wall are adapted to fit the sleeve **26** with a sliding fit and uniformly space the heat sink **80** from said sleeve, preferably with a clearance of about .005". The portions **88** of the lugs **84** which extend beyond the ends of the heat sink **80** project the same distance as the side wall portions **86** so that the same amount of clearance is provided at the top and bottom ends of the heat sink. Thus, there is a restricted passage of uniform size between the bottom end of the heat sink **80**, the side wall thereof and the upper end of the heat sink and the surrounding supporting and confining structure shown in FIG. 4, so that there is a uniform flow restriction, insofar as the stated clearance is concerned, from the passage **38** to the valve **60**.

The side wall clearance of the heat sink **80** provides greater flow capacity than that of the passage **38**, and the open valve **60** provides a passage with greater flow capacity than that of the side wall of the heat sink **80**. Therefore, when the valve **60** is opened to permit flow of lather from the outlet **24**, there is a reduction in pressure beyond the outlet of the aerosol container. While no actual observation has been made, it is believed that the passage provided around the heat sink **80** and the passage provided by the groove or channel **46** of the heat sink or heat retaining member **44** contain lather in a fine foam form. It is also true of the heat sink **44** that flow from the passage **38** through the groove or channel **46** to the outlet valve **60** is less restricted in that direction and for that reason it is believed that because of even a slight reduction in the circuit below that provided by the aerosol can, valve **42** and passage **38** provides lather in the flow system. However, this may be a mixture of lather liquid which becomes the complete or finished lather when it issues from the valve **60**.

It has been found that if the outer valve **60** has a flow smaller than that of the passage provided by either the groove **46** or the wall of the heat sink **80**, the initial quantity of lather material dispensed after a period of nonuse comprises a watery liquid and large bubbles, rather than a fine lather. However, with the restricted flow provided by either of the heat sinks of FIGS. 3 and 6, and the maintenance of a constant heat supply, which can be much less heat than that required for instantaneous heating with each dispensal, insures a fine bubble lather of the desired consistency with a minimum or total lack of watery

fluid at the outset and warm comfortable lather to the feel of the face. Proper confinement of the pressurized lather base material whether it be in liquid form, a lather or a mixture of the two, and maintenance of a uniform relatively low heat, prevents the lather material from issuing as a liquid or from being dispensed under such conditions that it quickly breaks down or issues in the form of large bubbles.

It will of course be understood that various changes can be made in the form, details, arrangement and proportions of the various parts, without departing from the spirit of the invention.

I claim:

1. A dispenser for a container of aerosol lather material having a section for supporting said container and having a heating unit section defining a lather base material heating conduit connectable with the container wherein the improvement comprises: a heat sink composed of a body of heat storing material and wherein said conduit is in direct heat exchange relationship to said body of heat storing material and is elongated relative to its cross section and has an inlet and an outlet, an electrical heating element in heat transfer relationship to said body of heat storing material, a conductor for maintaining a supply of electrical power for said electrical heating element to continuously maintain the body of heat storing material at a temperature sufficient to warm and maintain the lather at a temperature which feels comfortably warm on the face of the user but insufficient to break down the bubble structure and liquefy the aerosol lather, a valved outlet for the dispenser communicating with the outlet of said elongated lather conduit, said valved outlet, when closed, maintaining the lather in said elongated conduit at the pressure of the aerosol container, and said body of heat storing material comprising a core block, said elongated lather conduit comprising a channel about the side wall portions of the core block, and a sleeve of heat retaining material about said core block and covering said channel, a valve seat in said valved outlet yieldably engaged by said valve, and the outlet of said elongated lather conduit terminating at said valve.

2. A dispenser for a container of aerosol lather having a section for supporting the aerosol container and having a heating unit section with a lather material conduit connectable with the container, wherein the improvement comprises: a body of heat absorbing and storing material defining a wall portion of said conduit, the conduit being in direct heat exchange relationship to said body, said conduit having an inlet and an outlet and being sufficiently small in flow capacity to provide pressure retention and flow restriction for the lather material, said body of heat absorbing and storing material comprising a mass of greater volume than the total volumetric void of said conduit, means for supplying electrically generated heat to said body of heat absorbing and storing material to a degree sufficient to continuously maintain the body of heat absorbing and storing material at a temperature sufficient to warm and maintain the lather at a temperature comforably warm to the face of the user but insufficient warm to break down the bubble structure of and liquefy the aerosol lather, and a valved outlet for the dispenser communicating with the outlet of said elongated lather conduit and said valve outlet, when closed, maintaining the lather in the elongated conduit at the pressure of the lather base in the aerosol container, and said dispenser having a port for connecting the outlet of an aerosol container with the inlet of said conduit, the dispenser having an outlet valve in flow communication with the conduit, the flow capacity of said conduit being less than that of the outlet valve.

3. A dispenser for a container of aerosol lather having a section for supporting said container and having a heating unit section defining a lather base material heating conduit connectable with the container, wherein the invention comprises: a heat sink composed of a body of heat storing material and wherein said conduit is in direct heat exchange relationship to said body of heat storing material and is elongated relative to its cross section and has an inlet and an outlet, an electrical heating element in heat transfer relationship to said body of heat storing material, means for maintaining a supply of electrical power in said electrical heating element to continuously maintain the body of heat storing material at a temperature sufficient to warm and maintain only the lather in said conduit at a temperature which feels comfortably warm on the face of the user but insufficient to break down the bubble structure and liquefy the aerosol lather, and said body of heat storing material comprising a core block, said elongated lather conduit comprising a channel about the side wall portions of the core block, and a sleeve of heat retaining material about said core block and at least partially defining said channel.

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