

Aug. 16, 1966

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THERMO-SHAVE DISPENSING AND REUSABLE UNIT

Filed Aug. 24, 1964

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Fig. 2.

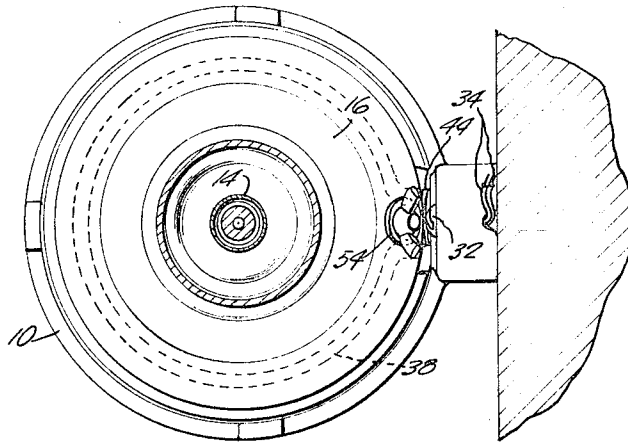
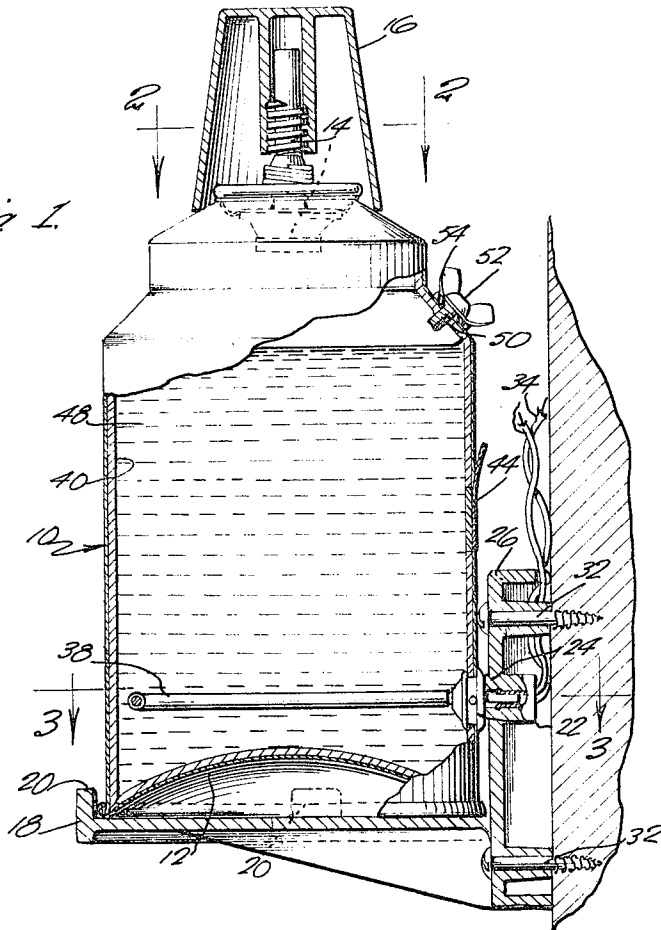


Fig. 1.



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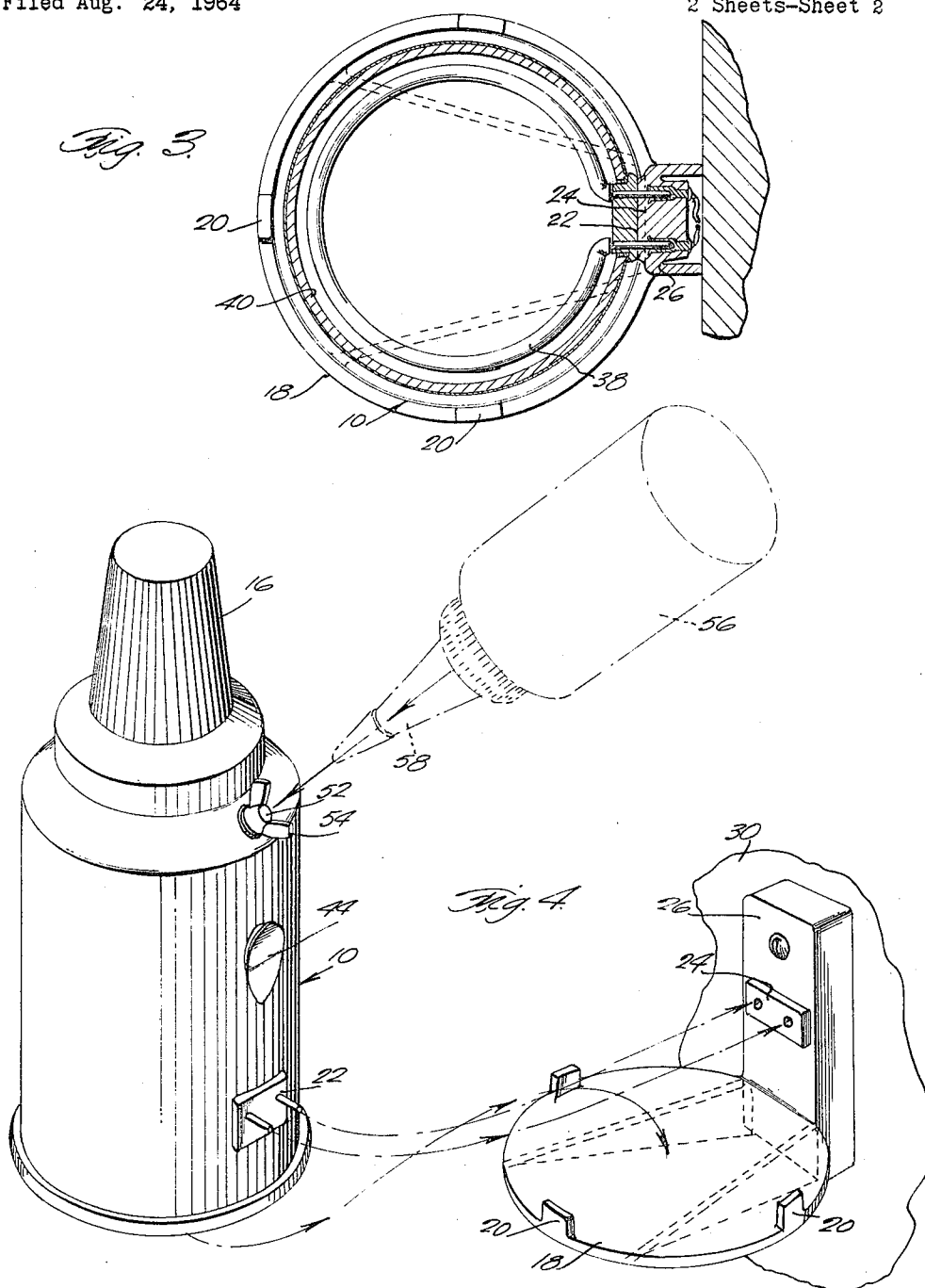
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THERMO-SHAVE DISPENSING AND REUSABLE UNIT

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Filed Aug. 24, 1964, Ser. No. 391,524
5 Claims. (Cl. 222-146)

The present invention relates to an improved thermo-shave dispensing unit, and has more particular reference to an improved thermo-shave dispensing unit that is repeatedly reusable by being adapted to having the dispensing unit or container refilled when it has become empty from use.

The conventional type of shaving cream dispensing containers generally now in use have as their chief propellant a halogenated alkane with a boiling point in the order of -40° F. to -20° F., or provide another type of low boiling hydrocarbon. It has become apparent from the results of the present invention that since the pressure at room temperature, about 70° F., exerted is in the order of 75 to 175 pounds per square inch gauge pressure, it is easily understandable that any appreciable temperature elevation would exert a corresponding pressure increase on the container which may exceed the safety limits of most existing containers.

It is therefore an object of the present invention to produce a shaving lather from a reusable shaving cream container which when it emerges from the can is at a temperature of from 125° F. to about 212° F., depending upon the given perimeters that may be engineered by a manufacturer of the device. For this reason, conventional types of propellants are not found to be usable.

A preferred embodiment of the present invention is to use a material at 190° F., and this has been found to be a comfortable temperature for shaving, allowing for heat dissipation during the application of the lather.

It is obvious that any of the heretofore used propellants such as the fluorinated hydrocarbons with a vapor pressure of 5 to 300 pounds per square inch gauge pressure at 70° F., or propane, or any of the previously used hydrocarbons, may not be heated without producing an impediment to safety.

It has been found that a mixture of a suitable liquid soap solution and a propellant comprised of a halogenated alkane with at least two bromine atoms replacing the hydrogen atoms and the remainder of the hydrogen atoms being replaced by other halogen atoms and having a vapor pressure of from about 28 inches of mercury vacuum to about 0 pounds per square inch gauge produces the optimum temperature pressure ratio at 190° F. An example is dibromotetrafluoroethane which at 190° F. has a vapor pressure of about 40 pounds per square inch gauge pressure. This material is relatively non-irritating to the skin, with only a trace of any stinging sensation and then only if left on the face for an extended period. The relatively low corrosive characteristic of dibromotetrafluoroethane also makes this the preferred propellant where it is to be heated.

The container has many conventional features but also contains a wing nut and nipple arrangement that provides for filling an empty container with the above material, so that the container may be readily reusable in dispensing shaving lather. The container may be made of low quality materials, and if it is to be a long-lasting, replenishable unit, it may be constructed of higher quality materials with a filler opening so that the soap-propellant mixture may be replenished and the unit reused for an indefinite period.

One of the more important features of the improved apparatus is that the dispensing and reusable unit may

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comprise a container having an orifice controlled by a valve, an electric element disposed in the can for heating the agents that are to be dispensed by the can, and a relief means that is temperature-responsive to release the internal pressure of the can when the electrical control circuit means that may be applied to the control of the current in the electrical heater element fails or is otherwise inoperable. The relief means is merely a section of the wall that is displaced and releases the internal pressure upon a given application of pressure to the inside walls of the container.

A further and outstanding advantage of the dispensing and reusable unit of the invention is that other agents such as undercoating materials for coating the underside of fenders, and other body portions of automobiles, agents such as sealants, insulating materials, and other similar materials which may require hot application to surface areas by spray units, may be dispensed by the reusable and dispensing unit of the invention. It is important that the dispensing agents, as well as the material to be dispensed, are provided as contents of the container. The container may be repeatedly refilled as the container is expelled of its contents and pressure subsequent to heat being applied by the heater element.

Other objects and advantages will be apparent from a detailed description of a particular embodiment of the invention. In the description, reference is made to the accompanying drawings of which:

FIGURE 1 is a partially broken away side elevational view of the thermo dispensing and reusable container being applied to a source of current at a wall plug, in accordance with a preferred embodiment of the present invention;

FIGURE 2 is a plan cross-sectional view of the container taken along lines 2-2 of FIGURE 1;

FIGURE 3 is a plan cross-sectional view of the heater element taken along lines 3-3 of FIGURE 1; and

FIGURE 4 is an exploded perspective view showing how the container may be refilled and how the container may be applied to a dispensing unit holder or shelf and an electrical plug mounted on a wall, in accordance with an embodiment of the present invention.

Referring now to the drawings, there is shown a dispensing and reusable unit or container 10 having a recessed bottom 12, a valve assembly 14, and a safety cap 16 made of thermo setting plastic material, which may be of conventional manufacture. The bottom of the container 10 may rest on a shelf or dispensing unit holder 18 that may be constructed of thermo setting plastic material also. There may be provided further tabs 20, 20 disposed about the periphery of the shelf or unit holder 18 for assuring that the container does not slide off. There is further the provision of an electric plug 22 that is mounted on the side of the can and is adapted to be received in a mating plug 24 that is secured from a vertical portion 26 of the holder 18. The vertical portion 26 is seen as being secured to an existing wall 30 and is retained thereupon by screws 32, 32 as applied in any conventional manner. The plug 24 is connected to electric wiring 34 for connection to house current (not shown).

The plug 22 is shown in FIGURES 1 and 3 as being connected to a circularly disposed heating element 38 that is an electrical resistance and designed to dissipate 10 watts, for example, of power. The interior surfaces of the container 10 are provided substantially throughout with insulation layer 40, which layer may be comprised of such material as polyurethane or other insulating type material for retaining the heat in the can, so that if the contents of the can are heated to a temperature of, for

example, 195° F. the person who is to use the can may still be able to grasp the can in his hand without difficulty.

A side of the container 10, preferably the side having the plug 22 mounted therein and the side being positioned adjacent the existing wall 30, contains a release safety tab 44 so that when the internal walls of the can are subjected to a substantial measure of pressure due to the heating element 38 heating the material within the can to an excessive pressure, then the release safety tab 44 is displaced and the pressure of the contents in the can is released without the can or container exploding.

The container is shown in FIGURE 1 to contain material 48. This material may be a mixture of a suitable liquid soap solution and a propellant comprised of a halogenated alkane with at least two bromine atoms replacing the hydrogen atoms and the remainder of the hydrogen atoms being replaced by other halogen atoms and having a vapor pressure of about 28 inches of mercury vacuum to about 0 pounds per square inch gauge, so that there is produced the optimum temperature pressure ratio at 190° F., as a result of the heating element 38 being energized from the house current source. One example of the propellant is dibromotetrafluoroethane, which is preferred. The propellant is chosen so that it is relatively non-irritating to the skin without more than a trace of stinging sensation and then only if left on the face for an extended period, where the suitable liquid soap is used for the purpose of shaving.

On an upper portion of the container 10, there is disposed a threaded opening 50 and a bolt 52 having a wing nut configuration, as shown in FIGURES 1 and 4. The purpose of the wing nut assembly 52, 54 is that it may be removed from the threaded opening 50 so that when the contents of the container 10 are depleted, the container 10 may be refilled by inserting or injecting additional material from an external source 56, as illustrated in FIGURE 4. The source 56 may have a neck 58 in which the end thereof fits within the opening 50 so that none of the contents is spilled as the source 56 is applied to the container 10. In this way, the liquid soap solution and propellant mixture, or any other mixture having a propellant therein whether such mixture contains with the propellant an undercoating agent for use and application to undersides of vehicles, sealants, insulating material, and other materials which may require hot application for use on surfaces, refill the container 10. Upon the contents of the container 10 being heated by energization from the electric heater element 38, pressure is developed in the container 10 sufficiently so that the release of the contents by the valve assembly 14 upon manual depression thereof provides a flow of the mixture including the propellant, as is common in aerosol devices, and in which the propellants are heated to a temperature range of between 125° F. to about 212° F. as expelled from the container.

It is possible to provide a temperature control cut-off element in circuit with the plug and wiring 34 as an integral part of the system, or the temperature control cut-off unit may be embodied as part and integral with the container 10 so that a uniform temperature selected between 125° F. to about 212° F. may be used. In this way, the propellant has a vapor pressure from about 28 inches of mercury vacuum to about 30 pounds per

square inch gauge pressure at 70° F. until the container becomes empty.

It should be understood that the specific apparatus herein illustrated and described is intended to be representative only as many changes may be made therein without departing from the clear teachings of the invention. Accordingly, reference should be made to the following claims in determining the full scope of the invention.

What is claimed is:

1. A dispensing and reusable unit comprising a container having an orifice controlled by a valve, an electric element positioned within said container having terminals for connection to a source of current terminals for heating the contents of the container to 125° F. to about 212° F., at a vapor pressure from about 28 inches of mercury vacuum to about 0 pounds per square inch gauge pressure at 70° F., a propellant in said container being mixed with a material to be dispensed, said propellant being a halogenated alkane having not more than two carbon atoms and containing at least one bromine atom, and a threaded plug for mating with a threaded orifice to apply additional material to the container when the plug is removed so the container may be refilled when empty, and to insure pressure within the container when the plug is engaging the threaded orifice, and the pressure being maintained therein when the electric heater element is electrically energized and a wall bracket for mounting the container thereon, said source terminals positioned adjacent the wall bracket to cooperate with the terminals on the container when the container is in the wall bracket.

2. The invention according to claim 1 wherein an insulating coating is provided substantially throughout the inner walls of the container.

3. The invention according to claim 1 wherein a safety release tab is provided on a surface of the container and is releasable upon excessive build-up of pressure within the container.

4. The invention according to claim 1 wherein said propellant is dibromotetrafluoroethane.

5. The invention according to claim 1 wherein there is mixed with the propellant a liquid soap solution for use as a shaving soap.

References Cited by the Examiner

UNITED STATES PATENTS

779,983	1/1905	Alexander	222—397
1,537,552	5/1925	Rotunno	222—146
1,889,507	11/1932	Watson	222—146
2,653,130	9/1953	Eiseman	252—8
2,822,961	2/1958	Seaquist	222—397
2,921,897	1/1960	Glendenning	252—8.1
2,974,214	3/1961	Taniguchi	219—437
3,101,875	8/1963	Michel	
3,137,417	6/1964	Zetterstrom	169—1 X
3,143,636	8/1964	Lupovici	222—146 X
3,144,174	8/1964	Abplanalp	239—135 X
3,155,292	11/1964	Webster	222—397
3,168,210	2/1965	Williams	222—396 X

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