

# COMMISSIONER'S DECISION

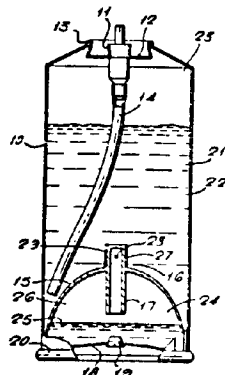
## OBVIOUSNESS: Aerosol Dispensing Container

The application relates to an aerosol container for spraying antiperspirants and other substances free of liquified propellant. It was refused for failing to define a patentable advance in the art. The Board was not persuaded that the invention claimed is taught by or is obvious from the cited art.

## Final Rejection: Reversed

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated August 28, 1975, on application 140,066 (Class 222-53). The application was filed on April 18, 1972, and is entitled "Aerosol Dispensing Device." The Patent Appeal Board conducted a Hearing on November 10, 1976, at which Messrs. D.N. Deeth and P.K. Holland represented the applicant. Also in attendance was Dr. R.S. Tonge, a representative of Unilever Limited.

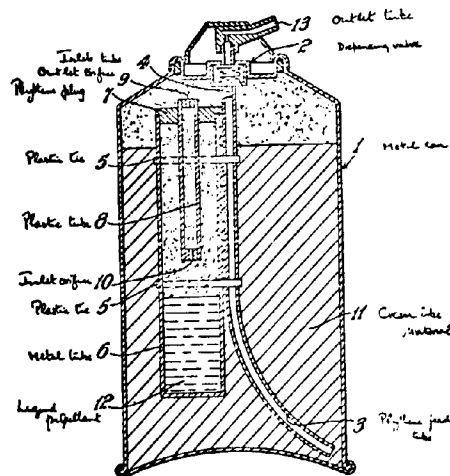
The application relates to an aerosol container for spraying antiperspirants and other substances free of liquefied propellant. The presence of liquid propellant in sprayed materials causes chilling and other undesirable effects for the user. The device comprises a main compartment provided with a dispensing valve, and which contains the substance together with sufficient pressurised propellant vapour to effect dispensation. At the bottom of the container is a reservoir containing both liquefied propellant and pressurised propellant vapour. A communicating valve is located between the reservoir compartment and the main compartment. Figure 2 of the application illustrates the device claimed.



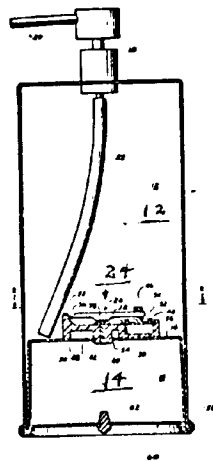
In the Final Action the examiner refused the application for failing to define patentable subject matter over the following patents, common knowledge and expected skill.

British	875,384	Aug. 16, 1961	Clark et al
United States	3,258,163	June 28, 1966	Brush

Clark discloses dispensing devices, and in particular devices for dispensing flowable materials by the pressure of the vapour of a liquid propellant which has a low boiling point. It is an object of the Clark invention "to provide a novel and improved device for dispensing flowable materials by vapour pressure in which contact between liquid propellant and flowable material is reduced." Figure 1 of the patent illustrates his invention.



Brush discloses a dispensing container of the gas propelled type which operates at low pressures. The drawing, below, illustrates the invention and shows a pressure reducing valve 24 between a propellant charge 14 and a product container 12.



In the Final Action the examiner stated (in part):

The British Patent and this application are quite similar in purpose. However the British Patent does not provide a mechanical pressure reducing valve. Orifices 9 and 10 do act to prevent a liquid flow and because of their capillary nature do effect some pressure reduction but nothing of any great value. However to provide a pressure reducing valve between a high pressure propellant container and a lower pressure product container is held obvious in view of Brush who does just that. To provide a dome shaped top to the propellant container is held to be a mere matter of choice and elementary design. To provide a fill valve at 19 is also held to be a mere matter of choice and elementary design. Note element 62 of Brush in this regard.

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It is here held that the alterations applicant has made to the device of British Patent 875,384 are obvious in view of Brush and common knowledge. In this respect applicants' attention is drawn to British Patent 399,650 of October 12, 1933 which establishes that a one way rubber sleeve valve as shown in Fig. 2 of the instant application is common knowledge.

To employ it as applicant has done is but expected skill. Applicant's attention is also drawn to British Patent 875,384, page 1 lines 53-57 wherein is stated that "The aperture and the outlet aperture may be in the form of valves but are preferably small seized orifices" (emphasis added). Thus patentee envisaged valves generally but chose a pin type.

In response to the Final Action the applicant argued that the application is not open to objection on the ground stated by the examiner. He says that the Clark invention possesses disadvantages that rule it out of consideration for commercial use, and that the valve in Brush operates in an entirely different manner from that in the present application. He also stated (in part):

The British Patent also fails to disclose the use of a communicating valve, which, as required by the claims in the present application is constructed so that it is held closed except when opened by a predetermined level of pressure difference between the product compartment and the propellant reservoir to permit propellant in the vapour phase to pass from the propellant reservoir to the product compartment. It must be emphasized that the only means shown in the British Patent 875,384 for limiting the mixing of propellant product when in use is the provision of capillary openings 9 and 10. Note that mixing is limited and not prevented, as will be appreciated from a careful study of the specification. Applicants agree with the Examiner when he states that the capillary openings 9 and 10 permit gas to flow into the container 1 to effect product discharge, but they cannot agree that these self same capillary openings will act to prevent liquid flow. Certainly, liquefied

gas propellant cannot flow out of the tube 6 via tube 8 even if the device is inverted, but what the Examiner has not appreciated is that liquid product is not necessarily prevented from entering the capillary opening 9, especially when the container is shaken or inverted. There is clearly no mechanism whereby the propellant pressure in the tube 6 can be maintained at a value in excess of that within the headspace of the can: in fact the pressure inside and outside tube 6 will normally be the same. Hence, at the moment when product is dispensed, pressure within the headspace will drop, liquefied propellant in tube 6 will boil-off causing more propellant gas to enter the headspace. The consequence of this will be that the temperature of the liquefied propellant will fall due to loss of latent heat of evaporation, gas pressure within tube 6 will diminish due to the temporary temperature reduction and product might at this point be drawn into the propellant reservoir tube, especially if the device is inverted.

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Brush is clearly concerned with low pressure systems: a dispensing pressure of 3-10 lbs per square inch is referred to at column 1, line 23 and Brush makes particular reference to the use of a pressure of 3 psi at column 4, line 9. This very low pressure clearly has a profound effect on the nature of the product which is to be dispensed, and also on the sensitivity of the valve inside the Brush device. Brush states at column 4, line 23 that

"The container may be used to dispense air sensitive liquids with a gentle controlled flow, and without atomisation or foaming or spray effect associated with the usual aerosol container." (emphasis added).

It can be concluded from this that the Brush device would be quite ineffective for dispensing an atomised spray which it is noted is a most important attribute of Applicants device.

In this connection, claim 1 of the present application requires the presence of a liquefied gas propellant, while Brush discloses only a compressed gas. Claim 2 requires that the second compartment be adapted to contain a liquefied gas, and it is not clear that the compartment 14 is adapted to withstand liquefied gas pressure.

The question to be considered is whether or not the applicant has made a patentable advance in the art. Claim 1 which is before us reads as follows:

An aerosol dispensing device having a top outer wall, a bottom outer wall, a substantially cylindrical side outer wall, and a bell-shaped interior wall, consisting essentially of:

- i) a first compartment within the device having as one of its boundaries the bell-shaped interior wall, the first compartment containing a substance to be dispensed and a liquefiable gas propellant in vapour phase, the substance when a liquid comprising also dissolved propellant gas

at the saturation concentration appropriate for the liquid substance and the propellant gas;

- ii) a dispensing valve extending through an outer wall inter-connecting the first compartment and the atmosphere;
- iii) a second compartment within the device having as one of its boundaries the bell-shaped interior wall, and having an inlet through an exterior wall for introduction of a liquefied gas propellant, the second compartment containing liquefied gas propellant in liquid and vapour phase; the vapour pressure in the second compartment being higher than the vapour pressure in the first compartment; and
- iv) a communicating valve extending through the interior wall inter-connecting the first and second compartments, the communicating valve permitting the passage of vapour phase propellant from the second to the first compartment while preventing passage of liquid phase propellant from the second to the first compartment; the communicating valve comprising an open ended tube extending from the interior bell-shaped wall part way into the second compartment in such a manner that its open end remote from the interior bell-shaped wall is always above the level of the liquefied gas propellant whatever the position of the device; and the communicating valve having a resilient member which holds the communicating valve closed except when the gas pressure difference between the first and the second compartments rises to a predetermined level following dispensation of substance from the first compartment.

At the Hearing Mr. Deeth raised some interesting arguments which require careful consideration. Dr. Tonge demonstrated the use of different dispensers, and also assisted the Board with some relevant observations.

In order to determine whether or not an invention is present, it is necessary to review the prior art and consider its cumulative effect (see DeFrees and Betts Machine Co. D.A. Acc. Ltd. 25 Fox Pat. C. 58 at 59).

The applicant is seeking with an improved device to avoid the disadvantage of liquefied gas propellant being dispersed with the product, a disadvantage common to the usual aerosol dispensers. Both for economy and for ecological reasons it would be advantageous to reduce as far as possible the amount of propellant distributed into the atmosphere when the product is dispensed.

The primary reference (Clark) was discussed on page 3 of the present disclosure in the following terms:

In British Patent Specification No. 875,384 there is described and illustrated a dispensing device which makes use of a standard can and differs from the conventional system, in which the product to be dispensed is mixed with liquefied propellant, in that the propellant is contained in a separate receptacle which is attached to the dip-tube. In the assembly of the device the product to be dispensed is filled into the can, the said receptacle is fitted to the dip-tube which is in turn fitted to the dispensing valve. Propellant cooled to well below its boiling point is then fed into the receptacle, the receptacle sealed with a plug having an opening for releasing vapour, but not liquid propellant and the assembly disposed within the can to which the valve is secured as quickly as possible. Although this device requires the use of a reduced amount of propellant compared with the case where the product to be dispensed and propellant liquid are mixed, the device is essentially impractical in commercial terms since it does not lend itself to a high speed filling operation. Furthermore, because of the impossibility of preventing loss of propellant during assembly operation, the product to propellant ratio in the final device would be highly variable.

We note that the Clark patent is owned by the present applicant (Unilever Limited).

At the Hearing Mr. Deeth pointed out that the Clark device is so designed that it could never lend itself to a high speed filling operation, which "is a must in the manufacture of aerosol products." He also stated that it was impossible to prevent the loss of propellant during the assembly operation. The Clark patent does not disclose an inlet through an exterior wall through which liquefied gas propellant can be introduced into the propellant reservoir. This according to the applicant is a most important feature. The Clark patent uses capillary openings for limiting the mixing of propellant and product. In this application, the applicant uses a communicating one-way valve, which is constructed so that it is closed except when opened at a predetermined pressure differential between the product compartment and the propellant reservoir to permit propellant in the vapour phase to pass from the propellant reservoir to the product compartment. Clark did however, suggest that the "outlet aperture may be in the form of valves, but are preferably small sized orifices...."

We note that the British "provisional specification" discussed the use of valves, such as a Bunsen type valve. In the "complete specification" however, all reference to the Bunsen type valve was deleted and emphasis was placed on

a "capillary tube arrangement," which is also the only arrangement shown in the drawings. An explanation for the deletion was given by Dr. Tonge at the Hearing. He stated that the co-inventor of the Clark patent told him that they had thought of using valves, and did some experimenting with valves of the Bunsen type. The valves they tested "did not operate satisfactorily; they could not get them to work smoothly - they tended to clog."

The examiner also brought British Patent 399,650 into his final action to show that a one-way rubber sleeve valve is old. It does not however show the "septum tube 17" (see Figure 2 of the instant application supra). The septum tube prevents the liquefied gas propellant from entering the product compartment. In any event the applicant is not relying solely on the valve for novelty, but on the combination of the dispenser as a whole.

The Brush patent is only concerned with low pressure gas propellant systems; a dispensing pressure of 3-10 pounds per square inch is used. This low pressure has a direct effect on the nature of the product which is to be dispensed. Brush states that his container is used "to dispense air sensitive liquids with a gentle controlled flow, and without atomization or foaming or spray effect associated with the usual aerosol container." It appears clear then that Brush's device would be ineffective for dispensing an atomised spray, which is one of the objectives of the present device.

The poppet valve used by Brush operates in a manner which is different from valve 16 in the present application. The Brush device will operate with a gas propellant, but it would not operate as intended with a liquefied gas propellant. The propellant liquid would pass through the poppet valve if the container was held in any position but upright. This would obviate the advantages gained in separating product and liquefied propellant. The opening and closing of the poppet valve in Brush is caused entirely by pressure fluctuation in the upper (product) compartment, and is completely unaffected by pressure changes in the lower propellant compartment.

The valve in the dispenser of this application remains closed except when the gas pressure difference between the product compartment and the propellant reservoir rises to a predetermined level. It is clear then that the valve in Brush operates on a principle entirely different from the instant valve.

The device as claimed in this application essentially consists of two compartments separated by a bell-shaped interior wall. When held in the normally upright position, an upper compartment is provided for filling with the product to be dispensed. This is referred to as the first compartment. The second compartment is used for charging with liquefied gas propellant. A conventional dispensing valve is provided at the top of the container. A second communicating one-way valve is fitted between the compartments. The one-way valve includes an open-ended tube arranged to permit propellant gas to pass from the propellant reservoir to the product compartment, but to prevent passage of liquid gas propellant to the product compartment irrespective of the position in which the dispensing device is held. The open tube extends from the interior bell-shaped wall part way into the second compartment in such a manner that its open end remote from the interior bell-shaped wall is always above the level of the liquefied gas propellant whatever the position of the device. The communicating valve also prevents liquid product from entering the reservoir compartment containing the liquefied gas propellant.

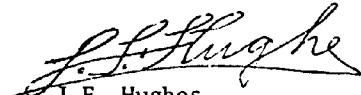
The applicant has made no attempt to claim the broad concept of keeping the product separate from the propellant, but has claimed what he states is an improved dispenser "which is both cheap and easy to construct and assemble, and which functions to dispense the product in the substantial absence of liquefied gas propellant."

It is of interest to note that the applicant has filed for patents in some twenty countries, and has to date received 10 to 12 patents on his dispensing device.



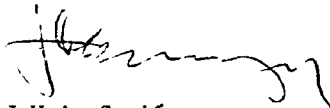
We have reviewed the prior art and have considered its cumulative effect (see DeFrees v. D.A. Acc. Ltd., supra). We are not persuaded however, that the invention claimed is taught by or is obvious from the prior art, common knowledge or expected skill. The applicant has overcome different problems, especially one of packaging, and has obtained a result in a more expeditious manner than heretofor. For example, no step of refrigeration is required in the instant packaging procedure, nor is there any loss of propellant. There is, in our view, sufficient evidence of thought, design, ingenuity in the invention and novelty in the combination (see Merco Nordstrom Valve Co. v Corner (1942) Ex. C.R. 138 at 155).

We believe that the claims on file are directed to patentable subject matter, and recommend that the Final Action be withdrawn, and the application returned to the examiner for resumption of prosecution.



J.F. Hughes  
Assistant Chairman  
Patent Appeal Board, Canada

I have reviewed the prosecution of this application and the recommendations of the Patent Appeal Board. In the circumstances I have decided to withdraw the Final Action, and return the application to the examiner for allowance.



J.H.A. Gariépy  
Commissioner of Patents

Dated at Hull, Quebec

this 31st. day of December, 1976

Agent for Applicant

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