COMMONWEALTH OF AUSTRALIA

Patents Act 1952

APPLICATION FOR A STANDARD PATENT

WE COLGATE-PALMOLIVE COMPANY a corporation organized and existing under the laws of the State of Delaware of 300 Park Avenue, New York, N.Y. 10022, United States of America

hereby apply for the grant of a Standard Patent for an invention entitled

MEASURING DEVICE FOR LIQUID PRODUCTS IN BOTTLES OR LIKE CONTAINERS

which is described in the accompanying complete specification.

This application is made under the provision of Part XVI of the Patents Act 1952 and is based on an application for a patent of similar protection made in France on 30 June 1983 (No. 8310898)

Our address for service is: F.E. RICE & CO., 28A Montague Street, Balmain, NSW 2041

Dated this 29th day of June 1984.

COLGATE-PALMOLIVE COMPANY

By: Patent Attorney

To: The Commissioner of Patents

COMMONWEALTH OF AUSTRALIA

F.E. RICE & CO., Patent Attorneys, Sydney
In support of the Convention Application made by

COLGATE-PALMOLIVE COMPANY
300 Park Avenue
New York, New York 10022
United States of America

for a patent for an invention entitled,

MEASURING DEVICE FOR LIQUID PRODUCTS IN BOTTLES OR LIKE CONTAINERS

We, Harold Obstler, Assistant Secretary of and care of the applicant company,
do solemnly and sincerely declare as follows:

(1) I am authorised by COLGATE-PALMOLIVE COMPANY to make this declaration on its behalf.

(2) The basic application as defined by Section 141 of the Act was made in France on June 30, 1983.

by

Bernard Cotelle
20 Rue Felix Merlin
93800 Epinay Sur Seine, France

who is the actual inventor of the invention and the facts upon which the applicant company is entitled to make the application are as follows:

The applicant is the assignee of the invention from the said actual inventor.

The basic application referred to in paragraph 2 of this Declaration is the first application made in a Convention country in respect of the invention the subject of the application.

New York, N.Y., U.S.A. JUN 01 1984
Declared at New York this 1st day of June 1984

COLGATE-PALMOLIVE COMPANY

By: Harold Obstler, Assistant Secretary

F. B. RICE & CO.,
Patent Attorneys,
Sydney.

This form is suitable for any type of Patent Application. No legalisation required.

DESCRIPTION
COMMONWEALTH OF AUSTRALIA
Patents Act 1952

COMPLETE SPECIFICATION

Applicaton Number:

Lead:

Complete Specification Lead:

Accepted:

Published:

Priority: 30 June 1983

Related Art:

Name of Applicant: COLGATE-PALMOLIVE COMPANY

Address of Applicant: 300 Park Avenue,
New York N.Y 10022, U.S.A.

Actual Inventor: Bernard Cotelle

Address for Service: F. R. RICE & CO.,
Patent Attorneys,
"A Montague Street,
BALMAIN, 5C4"

Complete Specification for the invention entitled:

MEASURING DEVICE FOR LIQUID PRODUCTS IN BOTTLES OR LIKE CONTAINERS

The following statement is a full description of this invention
including the best method of performing it known to us:--
DESCRIPTION

The present invention relates to the packaging of liquid products, the volume of which must be measured when using the product so that an appropriate measure of the product is employed. In this respect, it is convenient to have available a measuring device which may be incorporated in the neck of the bottle containing the liquid products or, better still, which is an integral part of the packaging, for example is unitary with the bottle cap.

In this respect, there is disclosed in the German patent No. 1 202 672 a measuring device for inserting in the neck of a bottle and comprising a measuring compartment which is filled upon inversion of the bottle and a reserve compartment which is fed by the measuring compartment when the bottle is put back into its normal position and communicates with the outlet orifice of the bottle, said two compartments having axes parallel to the axis of the bottle and being separate, the measuring compartment comprising two orifices communicating with the interior of the bottle, the first orifice being in the vicinity of its outlet orifice for filling and the second orifice being close to the opposite end of this compartment for discharging air.
in the course of this filling.

When the liquid reaches the level of this second orifice, the filling stops, apart from the arrival of an additional amount of liquid termed "free liquid" the volume of which is a function of various variables, such as the specific weight of the liquid and the extent of the filling of the bottle. Although this free liquid re-enters the bottle when the bottle is put back into its normal position owing to the depression prevailing therein, this measuring device results in a lack of precision in the measure which cannot be considered negligible.

Indeed, this measure depends on the inclination of the axis of the measuring compartment relative to the vertical and it is only when these two axes are strictly parallel that the precise measure is provided.

An object of the invention is to overcome these drawbacks and to provide a measuring device of higher precision and also capable of being manufactured simply and cheaply.

The invention provides a measuring device of the aforementioned type, wherein the second orifice of the measuring compartment is disposed at the level of the connection of the two compartments in a part common to the latter and is arranged in such manner as to act as an overflow for the reserve compartment which is arranged for this purpose to have an appropriate capacity
relative to the measuring compartment and which thus perfects the measuring achieved in the measuring compartment.

Further features and advantages of the invention will be apparent from the ensuing detailed description of some embodiments of the invention.

Reference will be made for this purpose to the accompanying drawings which are given solely by way of example and in which:

Figs. 1a, 1b and 1c diagrammatically illustrate a measuring device according to the invention in three stages of its operation;

Figs. 2 and 3 are axial sectional views of two elements constituting, by their assembly, a practical embodiment of the measuring device according to the invention;

Figs. 4 and 5 are respectively cross-sectional views taken along lines 4-4 and 5-5 of Figs. 2 and 3;

Fig. 6 is a partial view of a modification of the element illustrated in Fig. 3;

Figs. 7 and 8 are perspective views respectively corresponding to Figs. 2 and 3, and

Fig. 9 is a perspective view of the measuring device according to the invention after assembly of the two elements of Figs. 7 and 8.

With reference first of all to Figs. 1a, 1b and 1c for the description of the principle and operation of the measuring device, the latter is generally designated by the
reference character D and adapted to be inserted in the neck of a bottle F, for which it at the same time constitutes the cap.

The device D comprises a planar cover 1 rigid with a skirt 2, the assembly capping the neck of the bottle. Rigid with the cover 1 is a first tubular element or tube 3 which is connected by an inclined wall 4 to a second tubular element or tube 5 of smaller section closed at its opposite end. The tube 3 is divided by a partition wall 6 which extends from the cover 1 to a point slightly within the tube 5. The partition wall 6 defines in the tube 3 a measuring compartment A which is the part of this tube which is offset relative to the tube 5. The tube 5 constitutes a reserve or storage compartment B which communicates, on one hand, with the compartment A at the inner end of the partition wall 6 which forms with the wall 4 a part C common to the two compartments and, on the other hand, with the cover 1 through the second part of the tube 3, defined by the partition wall 6, which forms a communication passage 6a. Formed in the cover 1 in vertical alignment with the passage 6a is an outlet orifice 7 which may be closed by a flap 8.

Formed in the lateral wall of the compartment A is a first orifice 9 which puts this compartment in communication with the rest of the bottle F. The orifice 9 is formed in the vicinity of the connection of the
The measuring device operates in the following manner:

With the flap 8 open, the bottle F is inclined with respect to its normal position so as to reach the position illustrated in Fig. la. The liquid contained in the bottle F then enters the measuring compartment A by way of the orifice 9 and rises in this measuring compartment while expelling the air contained therein which escapes to the interior of the bottle by way of the tube 11. This rise of the liquid continues until the liquid level reaches the orifice 10, apart from a slight excess of liquid constituting the liquid termed free liquid.

The bottle is then returned to its normal position (Fig. 1b). The liquid of the compartment A consequently enters the compartment B along the partition wall 6, the relative volume of the compartments A and B being such that the level of the liquid reaches a point
slightly above the connection of the inclined wall 4 to the tube 3, i.e. above the orifice 10. The slight excess of liquid above the orifice 10 returns to the bottle by way of this orifice and the tube 11 which thus performs the function of an overflow. This return is facilitated by the orifice 12 provided in the partition wall 6. This air inlet indeed ensures the equilibrium of the level in the compartment B and the base of the compartment A up to the level of the orifice orifice 10.

The volume of the compartment B measured up to the level of the orifice 10 corresponds to the volume of the required measure while the volume of the compartment A is slightly greater, as explained before.

In order to obtain a sufficient precision in the volume of the measured amount of product, the intermediate chamber C interconnecting the compartments A and B has a minimum volume; further, its shape is such that it permits an easy passage of the liquid to the compartment B.

At this stage, the bottle may be closed again by means of the flap 8. This measure of liquid put in reserve in the compartment B is ready for use. In order to use the liquid, the bottle F is tilted with the neck downwards (Fig. 1c). The measured amount of liquid stored in the compartment B flows to the exterior by way of the orifice 7. At the same time, the
compartment A is again filled according to the procedure described with reference to Fig. 1a.

Consequently, after the first utilization in the course of which the compartment B must be filled a first time, the measuring device can be used directly by inverting the bottle merely once.

The measuring device, the principle and mode of operation of which have just been described, provides by its measuring in two stages in the compartments A and B a high precision in the dispensed measured amount of liquid. Further, it lends itself remarkably well to a simple and cheap manufacture, for example by moulding in a plastics material.

Figs. 2 to 9 illustrate such a practical embodiment.

In order to permit an easy moulding, the measuring device is manufactured in two elements, the first being illustrated in Figs. 2, 4 and 7 and the second in Figs. 3, 5, 6 and 8. Fig. 9 shows the two assembled parts in perspective.

The first element comprises, first of all, the means for closing the bottle F, namely the cover 1 with its skirt 2 and its closing flap 8 pivotally mounted on the cover 1 and clipping onto a cap portion 13. The flap 8 is provided with a stopper 3 adapted to be a force fit in the orifice 7 so as to close the latter.

The closing device constructed in this way may
comprise, at the base of the skirt 2, a screwed portion or a clipping portion 14 provided, if required, with an orientation notch 15 which is engaged on a portion provided on the exterior of the neck of the bottle.

Advantageously, there is provided in the closing device an inner skirt 16 which is shorter than the outer skirt 2 and ensures a seal on the upper part of the interior of the neck.

Apart from the closing device, the first element comprises the cylindrical tube 3 provided with its upper orifice 9 and the partition wall 6 and its orifice 12 which may be provided, as illustrated in Fig. 2 and more precisely in Fig. 7, in the form of a slot.

Preferably, as shown, the partition wall 6 is curved so as to enable the liquid to flow easily from the compartment A to the compartment B while this liquid is prevented from returning into the compartment A during the stage of utilization of the bottle.

The inner end of the tube 3 has a clipping means 17 cooperative with a complementary means 17a of the second element and a system 18 for preventing rotation which also cooperates with a complementary system 18a of the second element.

This second element is formed by the tube 5, the inclined wall 4 and the tube 11 provided with its orifice 10, the whole being in one piece.

As can be seen in Figs. 5 and 8, the tube 5,
...
A device according to claim 4, wherein said partition wall includes a narrow orifice or slot at a level close to the overflow orifice for balancing the pressure on each side of the partition wall.

6. A device according to any one of the preceding claims, wherein a planer take extends axially from the inclined wall to inside the measuring compartment where the planer take opens out at a level close to the outlet orifice and to substituted for the first orifice of the measuring compartment.

7. A device according to any one of the preceding claims, wherein the first tubular element is cylindrical, the partition wall being preferably curved with its convexity facing the measuring compartment, the second tubular element being semi-cylindrical and its cylindrical wall being in the extension of the start element and defining externally the communication passageway and its planer, or optionally curved wall with its convexity facing outwardly, being connected to said inclined wall with which it is rigid.

8. A device according to any one of the preceding claims, said device also constituting a device for closing the bottle, the first tubular element comprising a cover with the outlet orifice, a double set of slots adapted to engage therebetween the neck of the bottle, and a flap pivotally mounted on the cover and
including a stopper for the outlet orifice.

9. A device according to any one of the preceding claims, wherein the two tubular elements are moulded separately from a plastics material and are clipped together.

Dated this 28th day of June 1984.

COLGATE-PALMOLIVE COMPANY

Patent Attorneys for the Applicant
F.B. RICE & CO.
The closing device constructed in this way may