



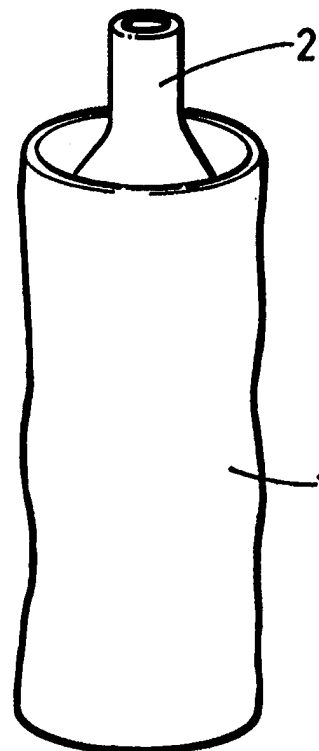
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(54) Title: DEVICE FOR RAISING THE TEMPERATURE OF A WINE OR DRINKING LIQUOR IN A CONTAINER

(57) Abstract

A device (1) for raising the temperature of a wine or drinking liquor in a container (2), which is adapted to surround at least a portion of the container (2) and contains a substance or substances capable of radiating heat. The heat is transferred from the device (1) to the contents of the container (2) to raise the temperature thereof. The heat may be produced by a chemical reaction involving the substance or substances. Alternatively, the substance or substances may be in the form of a gel, which is able to absorb heat from an external source for radiation to the container. The container may be a bottle, which may contain red wine or sake.



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DEVICE FOR RAISING THE TEMPERATURE OF A WINE OR DRINKING LIQUOR IN A CONTAINER

This invention relates to a device adapted for raising the
5 temperature of a wine or drinking liquor in a bottle or other container,
particularly but not exclusively red wine or sake.

Most red wines benefit from not being cooled or chilled for
serving, unlike white wines. In particular, to enjoy red wine at its best its
10 temperature should be raised to a point where its aromatic elements begin
to vaporise. The ideal temperature for serving red wine is between 54°F
and 64°F, dependant on the lightness or fullness of the wine.

Red wine is often stored in a cellar where the temperature is well
15 below the ideal serving temperature and is often in the order of 50°F. It
is known to allow the wine to stand at room temperature to raise its
temperature, however it may take several hours to increase the
temperature even by 10°F. It is also known to stand red wine in hot
water to raise its temperature more rapidly. However, controlling the
20 temperature is then rather inexact, and it is easy for the wine to become
too hot, spoiling the taste. There is, therefore, a need for a quick,
consistent and controllable means of warming wine such as red wine in a
bottle or other container to a preferred serving temperature. It is also
desirable to heat some other wines or drinking liquors such as sake before
25 consumption.

According to the present invention there is provided a device for
raising the temperature of a wine or drinking liquor in a container,
wherein the device is adapted to surround at least a portion of the
30 container, and contains a substance or substances capable of radiating

heat, which heat is transferred from the device to the wine or drinking liquor in the container to raise the temperature thereof.

The radiated heat may be produced directly by the substance or substances, or may be absorbed prior to radiation from a source of heat external to the device.

The substance or substances may absorb heat for radiation to the container from an external source. This source may be hot water in which the device is immersed. The substance or substances may be a gel adapted to absorb heat from the external source, e.g. hot water.

The heat may be produced by the substance or substances by a chemical reaction, which may result in the formation of crystals. This may be triggered by a shock wave which may be produced by the deformation of one or more objects contained in the device. The objects may be metal plates, and the substances which produce the crystals may be sodium acetate (trihydrate) and de-mineralised water.

In the latter embodiment, the substance or substances used in the device and/or the amount of the or each substance can be chosen to give a specified amount of heat radiated by the device per unit time, and an overall maximum total amount of heat radiated by the device.

Thus for a given start temperature of the wine or drinking liquor in the container, the amount of time of use for the device necessary to achieve a desired temperature or temperature range of the wine or liquor can be calculated. The maximum temperature achieved by the wine or liquor can also be determined, and the substance or substances and/or the

amounts thereof chosen such that a desired maximum temperature is not exceeded.

In one embodiment, the device is particularly adapted for use in
5 warming red wine in a bottle to a desirable serving temperature.

The device may be re-usable and preferably is adapted to surround all or a substantial portion of the container.

10 The device may be made of vinyl polymer material e.g. PVC, which may be clear, opaque, coloured, or printed with a design, product name, logo or the like. The device may be printed with instructions for use and re-use.

15 The invention will now be described by way of example only, and with reference to the accompanying drawings, wherein:

Figure 1 is a view of a device according to the invention shown surrounding a bottle;

20

Figures 2 and 3 show modified forms of the device of Figure 1 also surrounding bottles;

Figure 4 is a front view of a further device in accordance with the
25 invention shown surrounding a bottle;

Figure 5 is a back view of the device of Figure 4;

Figure 6 is an opened-out view of the device of Figures 4 and 5;
30 and

Figure 7 is an opened-out view of a further embodiment of the invention.

5 Referring to Figure 1, a device 1 in a sleeve-like form made from vinyl polymer fabric preferably medical grade PVC is shown surrounding a substantial portion of a bottle 2 containing wine. The bottle may be, for example, a standard 75cl capacity wine bottle, for which the device 1, typically, is approximately 75mm in diameter and approximately 220mm
10 in height. A smaller version, say approximately 73mm in diameter and approximately 190mm in height, may be produced. The device further comprises a base (not shown) which is integrally formed with the sleeve portion, and covers the bottom of the bottle. The base may be omitted. Within the wall of the device is contained a substance or substances
15 capable of radiating heat. Examples of such substances will be described later.

Figures 2 and 3 show modifications to the device. In Figure 2 the device is extended to surround the neck of the bottle 2 and is retained
20 around the neck using a draw-string 3. In Figure 3, the device 1 again surrounds the neck of the bottle 2 and is held in place by a tie 5 made of Velcro (Registered Trademark).

Figures 4 to 6 show a further embodiment of the invention. The
25 device 6 in this case wraps around the bottle 2 and is held in place by tabs 7 and a strip 8 (Figure 6) each made of Velcro (Registered Trademark).

Figure 7 illustrates a preferred embodiment of the device 1. This
30 is shown opened-out into a flat sheet, however, in production the device is

folded into the shape of a sleeve such that tabs 10, 11 overlap and are welded together. The device is approximately 155mm in height, 310mm long when opened out, and has a thickness of approximately 15mm when filled for use. The device comprises an inner layer 12 and an outer, opaque layer 13 which are welded together, along a weld line 14, to form a wall of the device. The substance or substances used to generate heat are placed between the layers, and sealed in the space formed therebetween. The seal line 14 incorporates semi-circular portions 15. The device is provided with transparent windows 16 in the opaque layer 13. This allows the contents of the device to be viewed, and so allows a user to determine from the visual state of the contents whether or not the device is in a condition for use. The windows are elongate in shape and their longitudinal axes are each aligned with two of the semi-circular portions 15 as shown. This provides lines along which the device can easily fold when positioned around a container for use. The device preferably contains sodium acetate (trihydrate) and demineralised water which react together as described below to produce heat. The outer layer of the wall of the vinyl fabric of the device is opaque and has instructions printed thereon for the use and reuse of the device. The inner layer of the wall is transparent, such that heat radiated by the device is directed inwardly through the transparent layer to the container.

In each of the above embodiments the wall of the device is hollow and contains a substance or substances able to produce heat to be radiated from the device into the bottle it surrounds in use, heating the wine in the bottle. Various substances may be used.

In one embodiment the wall of a device contains a liquid mixture of pharmaceutical grade sodium acetate (trihydrate), which is non-toxic, and de-mineralised water. A stainless steel plate, not shown, is provided

within the device, which can be deformed conveniently by hand pressure with a click action. The plate is retained in a small enclosure in the device, which prevents it from moving around inside the device and makes it easier to locate.

5

For use, the plate is deformed so that it produces a shock wave through the liquid mixture. This initiates a chemical reaction in the liquid mixture causing it to turn into crystals. As the crystals develop they produce heat. When the device is placed around the bottle the heat
10 produced by the crystals is radiated through the wall of the device into the bottle to heat the wine therein.

The device may be re-used. This can be achieved by placing the device in hot water for a sufficient length of time for the crystals to
15 become liquid again. Once the liquid has cooled the device is ready for re-use. This can also be achieved by placing the device in a micro-wave oven and applying micro-waves thereto until the crystals become liquefied.

20 The sodium acetate (trihydrate)/de-mineralised water liquid mixture is transparent, and the crystals formed by this mixture are white. Transparent windows are provided in the opaque vinyl fabric making up the device. These permit part of the contents of the device to be viewed. This will aid a user to determine whether or not the device is in a
25 condition to be used. If one of the transparent portions of the sleeve is positioned radially opposite the stainless steel plate, a user will also be able to determine whether or not full transformation of the liquid mixture into crystals has been achieved.

The ratio of sodium acetate (trihydrate) to de-mineralised water used in the liquid mixture of the device determines the heat output of the device per unit time and the overall total heat output of the device. To heat red wine from a cellar temperature of approximately 50°F, a ratio of 45% sodium acetate (trihydrate) to 55% de-mineralised water is chosen. With this ratio and approximate start temperature, leaving an activated device in place around the bottle for approximately 8 mins will heat the red wine to approximately 54°F to 57°F, the preferred temperature range for light-bodied red wines. Leaving the activated device in place for approximately 10 mins will heat the red wine to approximately 58°F to 61°F, the preferred temperature range for medium-bodied red wines, and leaving the activated device in place for approximately 12 mins will heat the red wine to approximately 62°F to 64°F, the preferred temperature range for full-bodied red wines. With this ratio and start temperature of the wine, the total amount of heat radiated by the device will not heat the red wine to above a temperature of approximately 64°F (above which temperature the wine is likely to be spoilt).

Choosing a different sodium acetate (trihydrate) to de-mineralised water ratio, different heat outputs per unit time and total heat outputs may be obtained. For example, a higher percentage of sodium acetate (trihydrate) may be used, which will give a higher total heat output. This could be used for heating sake, for example, which is ideally consumed at a much higher temperature than red wine.

25

As an alternative to the acetate/water mixture, a gel may be contained in the walls of the devices. For use, a device is immersed in hot water which heats the gel. The device is then placed around the bottle and the heat absorbed by the gel is radiated to the bottle and wine, thereby warming the wine.

30

CLAIMS

1. A device for raising the temperature of a wine or drinking liquor in
5 a container (2) characterised in that, the device (1) is adapted to surround
at least a portion of the container (2), and contains a substance or
substances capable of radiating heat, which heat is transferred from the
device (1) to the wine or liquor in the container (2) to raise the
temperature thereof.
- 10 2. A device according to claim 1 characterised in that the heat is
caused to be produced by a chemical reaction involving the substance or
substances.
- 15 3. A device according to claim 2 characterised in that the heat is
produced by crystals formed from a chemical reaction between sodium
acetate (trihydrate) and de-mineralised water.
4. A device according to claim 2 or claim 3 characterised in that the
20 chemical reaction is initiated by a shock wave.
5. A device according to claim 4 characterised in that the shock wave
is generated by shock wave generating means in the device.
- 25 6. A device according to claim 5 characterised in that the shock wave
generating means comprises a plate, the deformation of which generates a
shock wave.
7. A device according to any of claims 2 to 6 characterised in that the
30 substance or substances and/or the amount of the or each substance used

in the device (1) determines the amount of heat radiated by the device (1) per unit time.

8. A device according to any of claims 2 to 7 characterised in that the
5 substance or substances and/or the amount of the or each substance used
in the device (1) determines the total amount of heat radiated by the
device (1).

9. A device according to claim 1 characterised in that the substance or
10 substances is or are of a gel form able to absorb heat from an external
source for radiation to the container.

10. A device according to claim 9 characterised in that the external
source is hot water in which the device (1) is immersed.

15

11. A device according to any preceding claim characterised in that the
device (1) is of a sleeve-like form adapted to surround at least a
substantial portion of a bottle (2) containing wine or liquor, the heat-
radiating substance or substances being contained within a wall of the
20 device (1).

12. A device according to any preceding claim characterised in that the
wine is a red wine.

25 13. A device according to any preceding claim characterised in that the
liquor is sake.

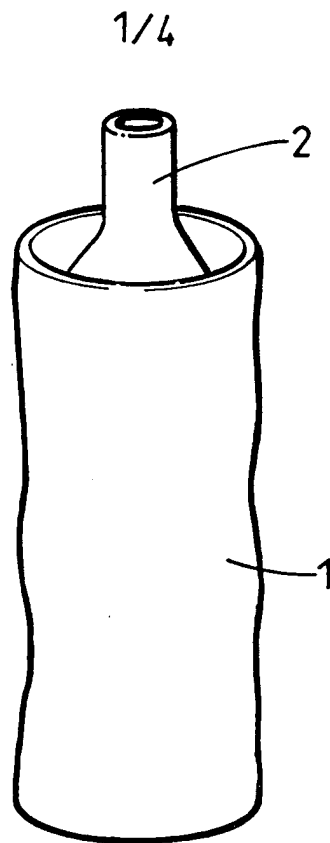


FIG 1

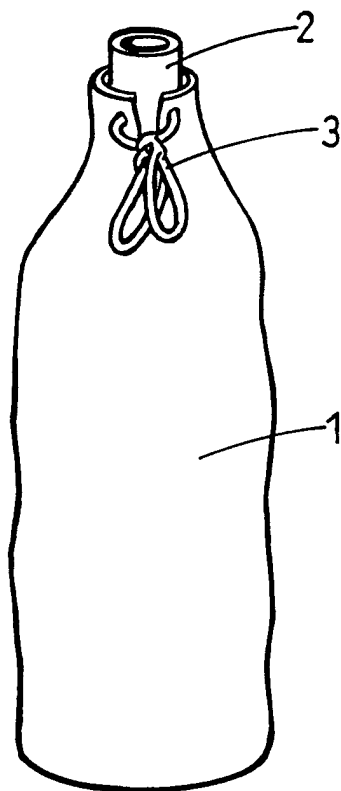


FIG 2

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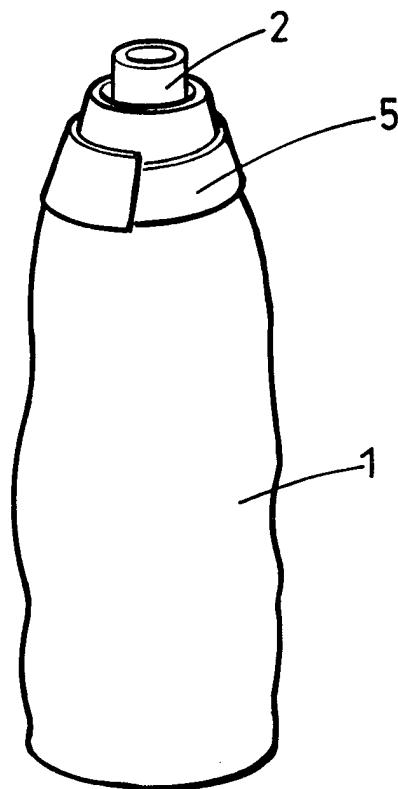


FIG 3

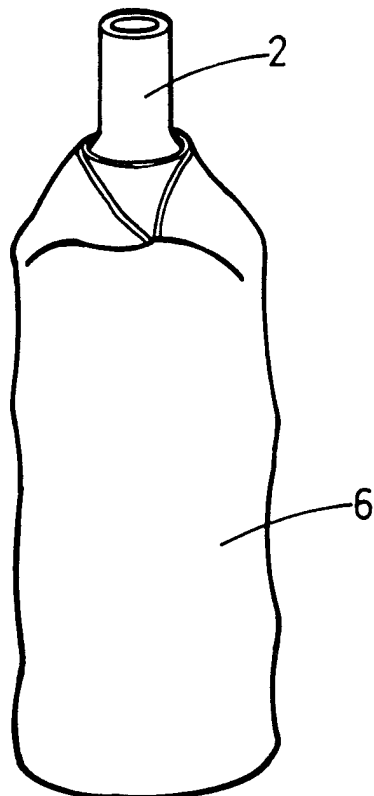


FIG 4

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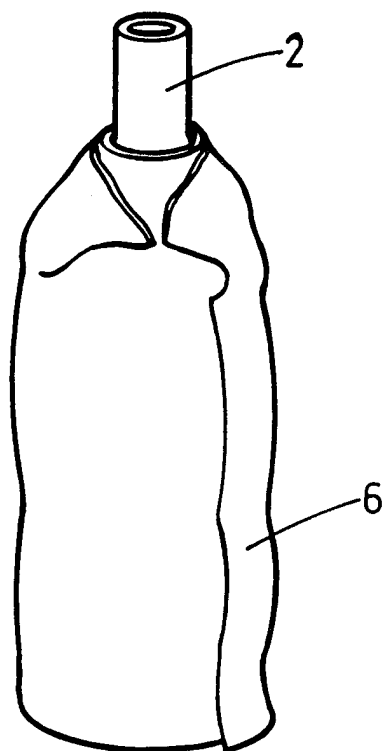


FIG 5

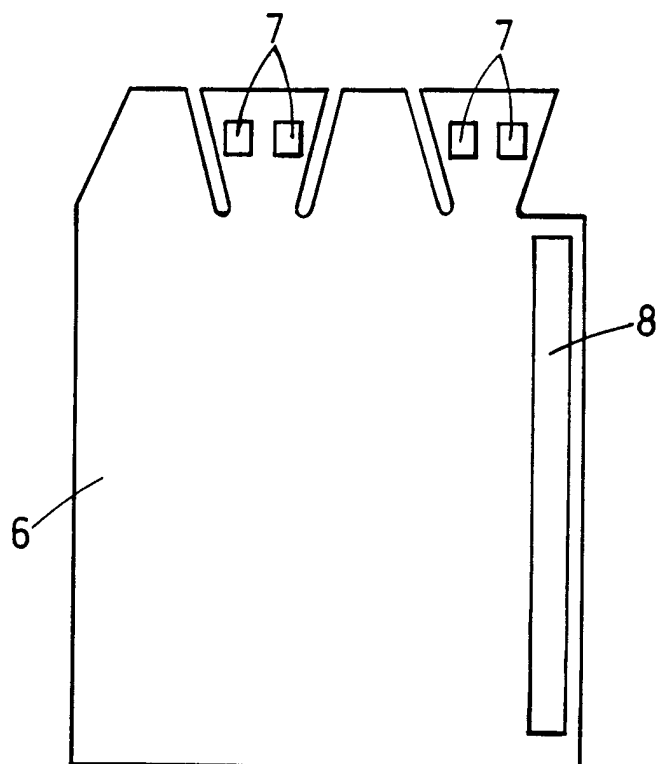


FIG 6

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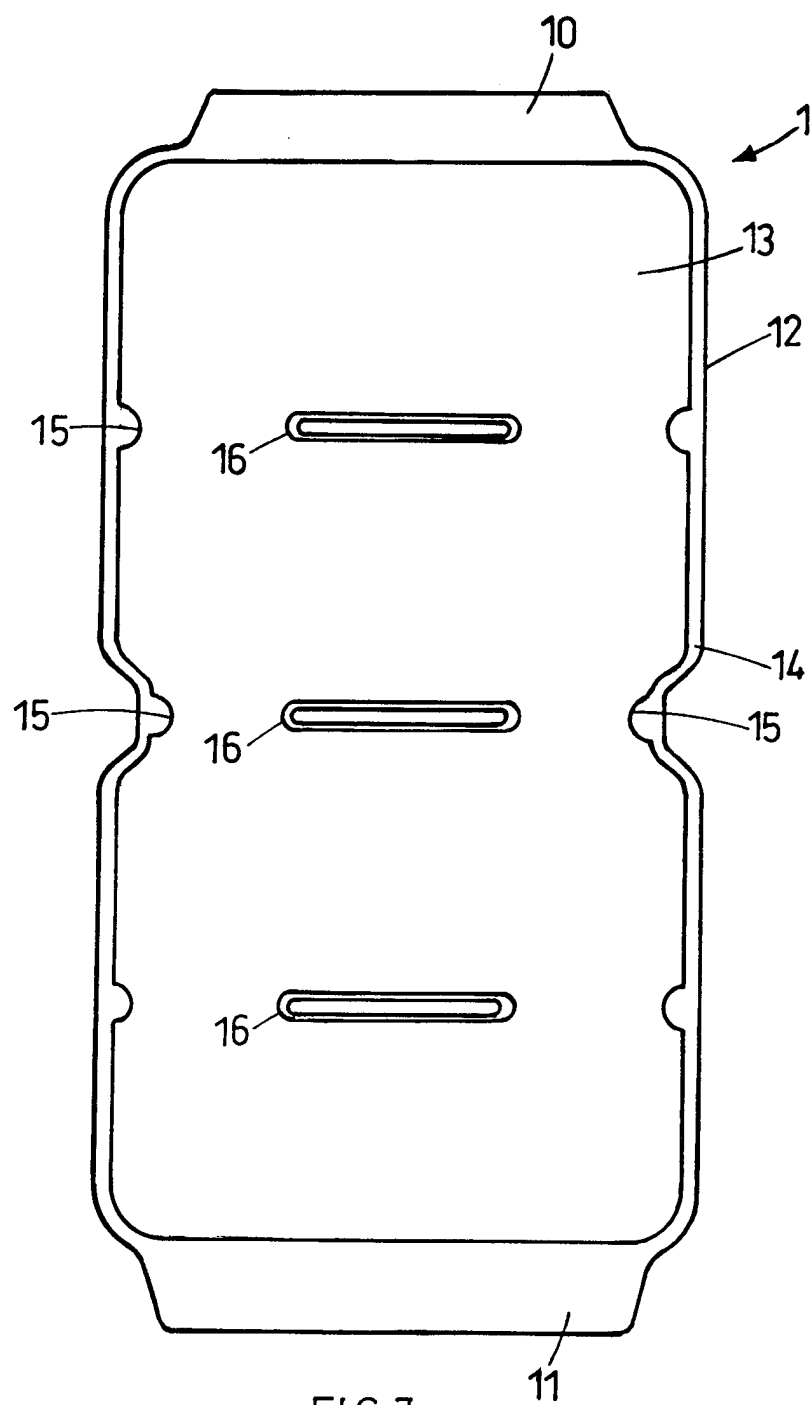


FIG 7

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 97/02778

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A47J36/28 A47G23/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A47J A47G F28D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 220 777 A (OTHMER) 5 November 1940 see page 2, column 1, line 23 - page 4, column 1, line 20; figures ---	1-13
X	US 5 205 278 A (WANG) 27 April 1993 see column 3, line 45 - column 4, line 35; figures ---	1-13
X	FR 1 603 429 A (VERGANO) 19 April 1971 see page 1, line 25 - page 4, line 9; figures ---	1,2,7,8, 11-13
X	US 2 596 664 A (DURHAM ET AL) 13 May 1952 see column 1, line 37 - column 3, line 26; figures --- -/--	1,2,7,8, 11-13

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 97/02778

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

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