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(54) **DEVICE FOR COOLING PACKAGED DRINKS**

(57) There are arranged in a container (1) having duly heat-insulated walls (2-3-4), one or more flexible sleeves (9) with a shape and size suitable for receiving therein respective packages (10), such as bottles of wine, which are immersed in a coolant (5) mostly flooding the container (1), which coolant can withstand temperatures of up to -45°C without freezing, said coolant being aided by a cooling system which includes a leak-tight compressor (7) and a pair of recirculation pumps (8) which generate hydrodynamic conditions for the coolant (5) in relation to the sleeves (9). Said flexible sleeves (9) are maintained extended due to respective springs (11), while counter springs (12) cause the expulsion of the packages (10) when the cooling thereof, controlled by respective timers, takes place. The cooling of the drinks to the suitable consumption temperature is thus obtained in a very short period of time, in a few minutes.

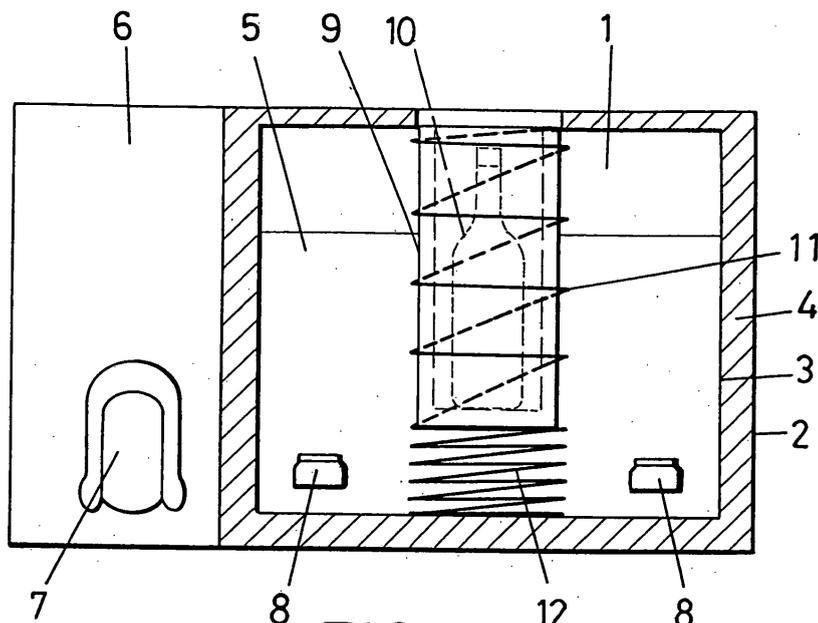


FIG.1

Description

OBJECT OF THE INVENTION

- 5 [0001] The present invention relates to equipment which has been especially devised for cooling packaged drinks, such as bottles of wine, in the moment immediately before their consumption.
- [0002] The object of the invention is to obtain an incredibly quick cooling of said drinks allowing them to be maintained in normal storage conditions up to the moment in which they are requested by the customer, at which time they can easily be cooled for serving to the customer in a reasonable time and at a suitable temperature.
- 10 [0003] The equipment of the invention is applicable in bars, cafés, restaurants, etc, and even at home.

BACKGROUND OF THE INVENTION

- 15 [0004] In the scope of application of the invention mentioned above, that of bottled wine, this has an optimal consumption temperature which is not normally room temperature, and can be considerably lower than this, especially in the case of white wines.
- [0005] In any public premises in which branded wines are sold, it is normal for the number of brands available to be rather considerable, which means that to provide good customer service, a suitable number of bottles of each brand appropriately cooled must be maintained; given that the present cooling equipment consists of simple cooling chambers, they require a very considerable time so that the wine reaches the consumption temperature, which time in which in virtually all cases is far greater than that available following a customer's request for a certain wine.
- 20 [0006] This not only means high investment and the taking up of a lot of space in order to provide suitable service in this respect, but moreover, on most occasions the temperature at which the wine should be consumed is far from the temperature at which it is stored, such that this extended cooling thereof when the wine is not consumed lead to a greater risk of deterioration.
- 25 [0007] Even though means exist allowing the virtually instantaneous cooling of certain alcoholic drinks, such as draught beer, such systems are based on making the drink circulate through cooling coils, which allows a quick temperature change, said system therefore being applicable only to drinks in bulk, there presently being no known system allowing such a quick cooling of packaged drinks, such as bottled wine.
- 30

DESCRIPTION OF THE INVENTION

- 35 [0008] The cooling equipment which the invention proposes is to fill the existing technological gap in the sector of packaged drinks, allowing an extraordinarily quick cooling thereof in a few minutes in an efficient way and without causing damage to the drink.
- [0009] To that end and more specifically, said equipment consists of a duly heat-insulated container including a bath in which a solution with a very low freezing point is used, such as monopropylene glycol or another substance capable of reaching temperatures around -45°C without freezing.
- 40 [0010] Logically, this container will be aided by cooling equipment capable of supplying the mentioned temperature to the heat exchange fluid, or at least a temperature lower than -30°C.
- [0011] In the mentioned container at least one flexible sleeve is provided, housed in the coolant and suitably sized to receive a bottle of wine inside, or where applicable the packaging involved, having the particularity that in said sleeve a spring is arranged which maintains the bottle inside the sleeve and immersed in the coolant, whereas a counter spring expels the container outwardly once the cooling time duly controlled by a timer has passed.
- 45 [0012] Recirculation pumps ensure a suitable movement of the coolant for maintaining optimal conditions of heat transmission with the bottle or container involved. Nevertheless, any other means for moving the coolant can be used, such as an electromechanical stirring system, consisting of a motor arranged in a compartment attached to the container of the coolant, a motor which actuates a shaft arranged inside the container of the said coolant, a shaft bearing blades the rotation of which leads to optimal stirring of the coolant.
- 50 [0013] Several flexible sleeves for respective bottles or containers can be arranged in a single container, each sleeve having the corresponding timer which will obviously act in function of the capacity of the bottle, of the temperature of the coolant and of the temperature at which the product is to be cooled. The hydrodynamic conditions of the coolant optimize heat transmission, being able to reach a state of turbulent flow.
- [0014] Obviously and in function of the needs in each case, the working temperature of the heat transmission fluid can increase considerably up to -10 to -15°C.
- 55 [0015] As is conventional, a thermostat will control compressor operation for the purpose of keeping the heat transmission fluid at the established temperature at all times.
- [0016] Although bottled wine has essentially been discussed up to now, the invention is obviously applicable to other

products such as beer or soft drinks packaged in bottles, cans or other containers, with no determining factor other than adapting the size and shape of the flexible sleeves to the type of container in question, it being possible in a specific equipment to have sleeves having different features for packaged drinks also having different features.

5 DESCRIPTION OF THE DRAWINGS

[0017] As a complement to the description being made and for the purpose of aiding to better understand the features of the invention according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description which, with an illustrative and non-limiting character, show the following:

Figure 1 shows a schematic side elevational view of cooling equipment for packaged drinks in which a bottle is being cooled.

Figure 2 also shows a schematic view, but this time a front elevational view, of the same equipment as in the previous drawing in a practical embodiment in which three cooling sleeves are incorporated.

Figure 3 shows a representation similar to Figure 2, though corresponding to equipment in which only two flexible sleeves are used, one in cooling position and the other which has been expelled.

Figure 4 shows a schematic upper plan view of the cooling equipment of Figures 1 and 2.

Figure 5 shows a general perspective view of an embodiment variant of the cooling equipment for packaged drinks in which the recirculation pumps in the previous drawings have been substituted by an electromechanical stirring system.

Figure 6 shows an upper plan view of the equipment shown in the previous drawing.

Finally, Figure 7 shows a sectional detail of the same equipment as in Figures 5 and 6 at the height of the stirring system.

25 PREFERRED EMBODIMENT OF THE INVENTION

[0018] In view of the drawings described, particularly Figures 1 to 4, it can be observed how in the cooling equipment proposed by the invention a suitably sized container or deposit (1) is arranged, in which a double wall, specifically an outer wall (2) and an inner wall (3), is used with the interposition of a layer of insulating material (4), determining optimal heat insulation for the mentioned container (1), mainly occupied by the coolant (5) or heat transmission fluid, such as said the mentioned monopropylene glycol solution, in the corresponding bath, or another substance suitable for reaching temperatures of around -45°C without freezing, allowing the equipment to operate at this heat level for quickly cooling the packages.

[0019] An ancillary compartment (6) housing the cooling equipment, shown schematically and exclusively by its compressor (7), is arranged next to this container (1).

[0020] The coolant (5) flooding the chamber defined in the container (1) causes a hydrodynamic cooling with the collaboration of recirculation pumps (8) making said coolant (5) not only maintain permanent contact with the flexible sleeves (9) housed inside said container (1), but also the dynamic action of the liquid on the surface of said sleeves (9) creates optimal conditions for heat transmission or exchange, that is, it facilitates and accelerates the cooling of the packages (10) housed inside the respective sleeves (9).

[0021] Each sleeve (9) is maintained duly extended, with a preferably cylindrical shape for internally housing the corresponding package (10), such that it is completely immersed in the coolant (5), for which purpose a spring (11) is arranged therein, as is shown in Figure 1. Nevertheless, each sleeve includes a counter spring (12) or any other suitable expulsion element such as a piston, a rack, etc. which in each operative cycle are maintained retracted, in an inoperative state, by any suitable blocking means so that the package (10) is maintained immersed in the coolant (5), but when the cooling time defined by a timer (13) included in each sleeve (9) has passed, said package is released causing the propulsion of the package (10) outwardly from the container (1), as can be specifically observed in Figure 3.

[0022] In the schematic detail plan view of Figure 4 in which the equipment incorporates three sleeves (9), the existence of three timers (13), one for each sleeve (9), is observed, each of them in turn having three functional possibilities, that is with three different timers in order to vary the cooling time in the corresponding sleeve (9) in function of the type of drink, the capacity of the package, etc.

[0023] The compressor (7) will obviously be leak-tight, as will the recirculation pumps (8) for which a flow has been provided comprised between 500 and 3,000 litres/hour in order to generate the provided fluid-dynamic cooling, the operation of said recirculation pumps (8) logically being controlled by the timer of any one of the sleeves so that said sleeves operate only when the equipment is in a working situation in at least one of its sleeves (9).

[0024] A practical embodiment variant of the cooling equipment is shown in Figures 5 to 7, in which said the mentioned recirculation pumps (8) have been replaced by an electromechanical stirring system formed by a motor (14) which makes a shaft (16) rotate through a coupling system (15), which shaft passes through the partition (17) separating the com-

partment (1) containing the coolant (5) and a compartment (18) specifically intended for housing the motor (14), the shaft (16) bearing a series of blades (19), all such that the diameter of the shaft (16) will be constant along its entire length and will have a machined axial groove for fixing the blades (19) in the desired position by means of a screw. Obviously, and given that the shaft (16) of the motor (14) must traverse the mentioned partition (17), the latter will incorporate an opening for that purpose provided with an anchoring and sealing ring making said opening leak-tight, preventing the outlet of the fluid (5) towards the compartment (18).

[0025] In this practical embodiment of Figures 5 to 7, the device has four sleeves (9) capable of receiving as many bottles (10), the compartment (6) for the cooling equipment is arranged at a lower level instead of in a side arrangement as in the example in Figures 1 to 4, and the equipment as a whole is devised as a piece of furniture (20) provided with wheels (21) for facilitating its movement on the floor or any other surface, incorporating switches (22) for starting up both the cooling equipment (7) and the motor (14).

[0026] According to the described structure, a cooling rate comprised between 3 and 10°C per minute is obtained, which means optimal effectiveness of the equipment, capable of cooling a drink from room temperature to a suitable consumption temperature, in times of less than two minutes, therefore customer wait time for the drink in question is virtually nothing.

Claims

1. A cooling equipment for packaged drinks particularly applicable to bottled wines and other similar drinks and having the purpose of allowing said drinks to be maintained at room temperature or at storage temperature, and cooling them quickly when one of the drinks is requested for consumption, **characterized in that** it includes a duly heat-insulated cooling container (1) flooded by a coolant (5) with a low freezing point, preferably about -45°C, said container including a cooling system capable of reaching the mentioned temperatures, with the particularity that in said container one or more flexible sleeves (9) are arranged, with a shape and size suitable for receiving therein respective packages (10), each sleeve (9) having means (11) for maintaining the package (10) therein and means (12) for expelling said package outwardly, controlled by a timer (13) which establishes the dwelling time of the package in the coolant (5).
2. A cooling equipment for packaged drinks according to claim 1, **characterized in that** the cooling system includes a leak-tight compressor (7) and a system (8-14) for moving the coolant (5), determining hydrodynamic conditions inside the container (1), with a turbulent flow of the coolant (5) on the sleeve or sleeves (9).
3. A cooling equipment for packaged drinks according to the previous claims, **characterized in that** each flexible sleeve (9) includes an inner spring (11) which tends to maintain the sleeve extended for housing the package (10) therein, being located under each sleeve (9) a counter spring (12) which is maintained in a retracted and inoperative position while the corresponding timer (13) is operating, the end of said timer (13) cycle causing the release of the counter-spring (12) and the consequent expulsion of the packaging outwardly from the container (1).
4. A cooling equipment for packaged drinks according to the previous claims, **characterized in that** the system for moving the coolant (5) consists of at least one recirculation pump (8), said pump or pumps being controlled by any of the timers (13) corresponding to the respective sleeves (9), such that said pumps (8) act in parallel to any one of the timers (13).
5. A cooling equipment for packaged drinks according to the previous claims, **characterized in that** the system for moving the coolant (5) consists of an electromechanical stirring system consisting of a shaft (16) actuated by an electric motor (14), the shaft being housed inside the compartment (1) which contains the coolant (5), a series of blades (19) stirring the coolant being integral with such shaft, the mentioned motor (14) being located in an attached compartment (18) compartment that is leak-tight in relation to the compartment (1) containing the coolant.
6. A cooling equipment for packaged drinks according to the previous claims, **characterized in that** cylinders, racks or any other similar element controlled by the corresponding timer (13) can be incorporated in the equipment as a mechanism for expelling the packages (10) as a replacement for the counter springs (12).

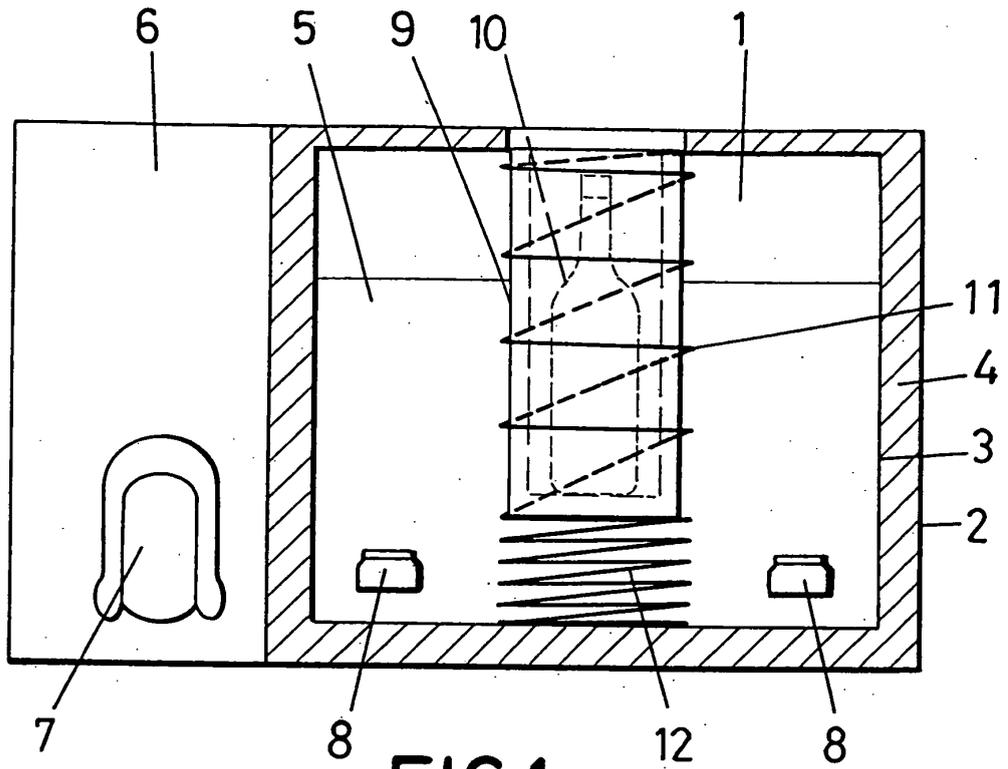


FIG. 1

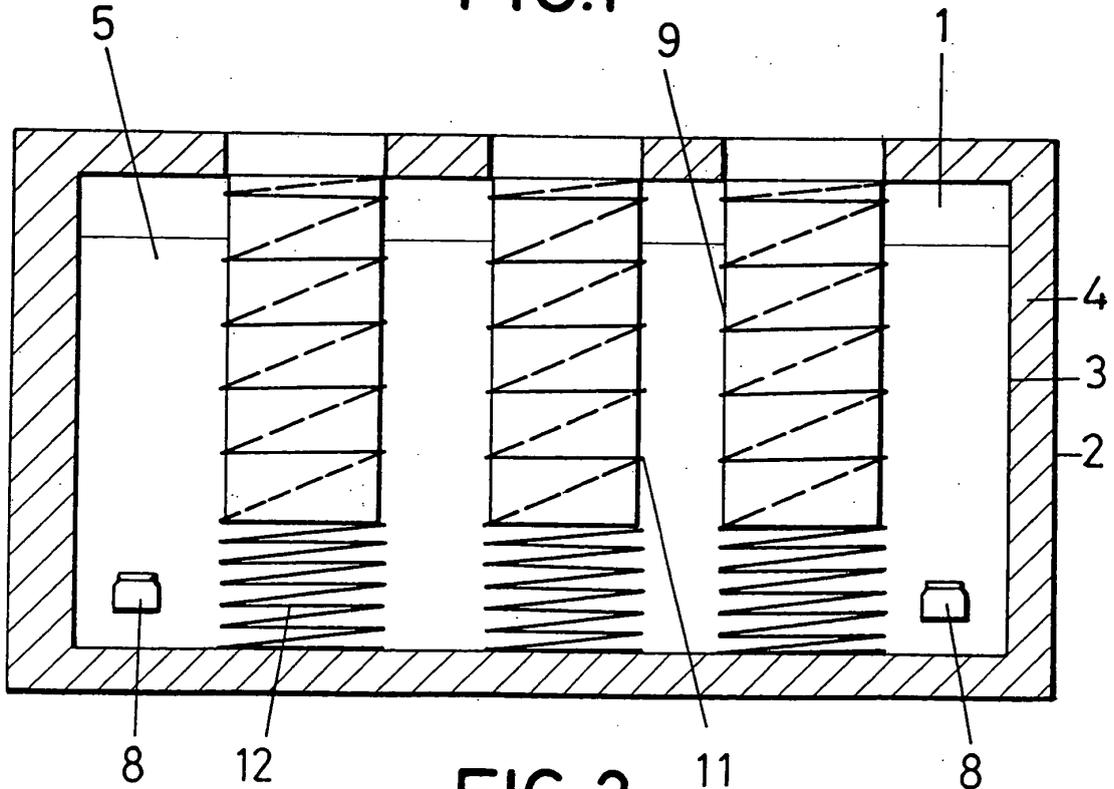


FIG. 2

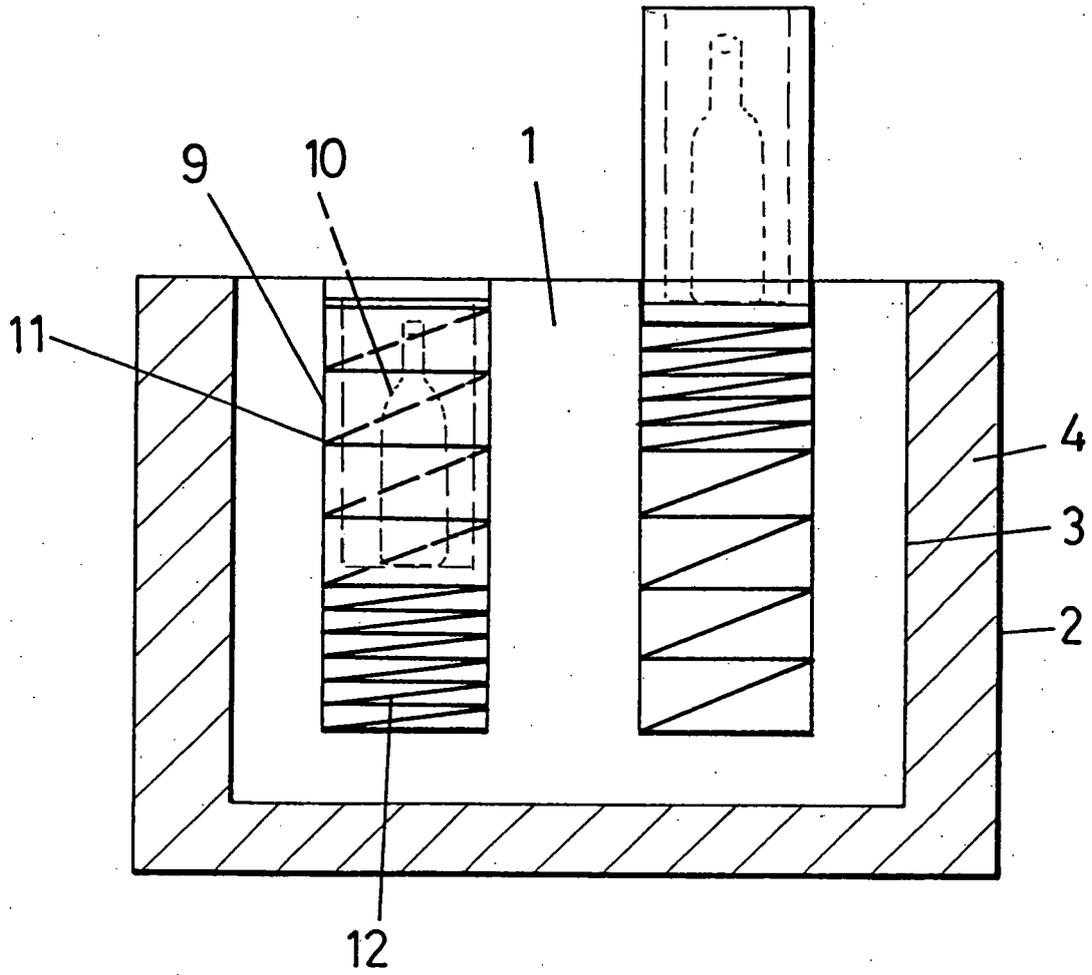


FIG. 3

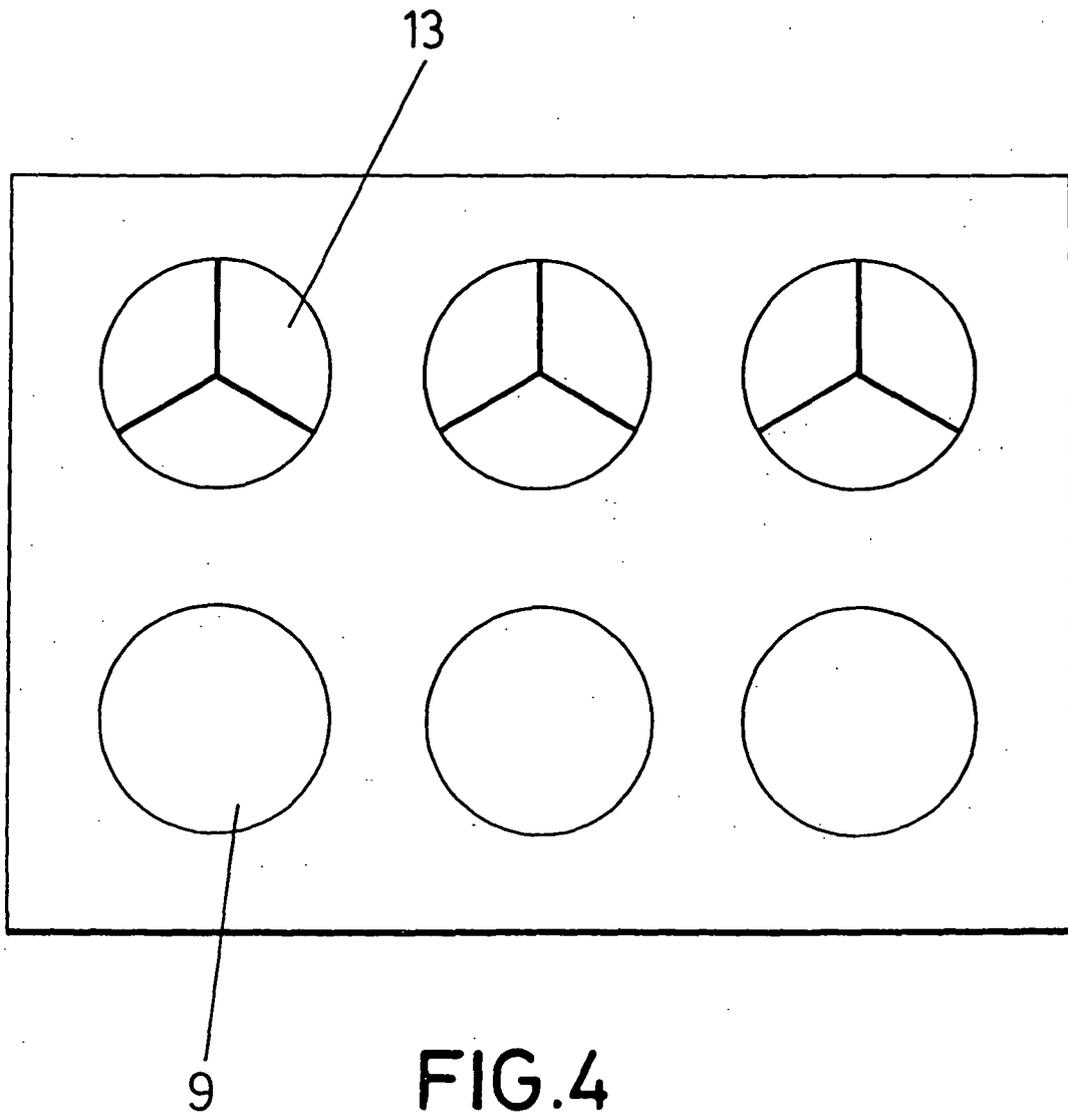


FIG.4

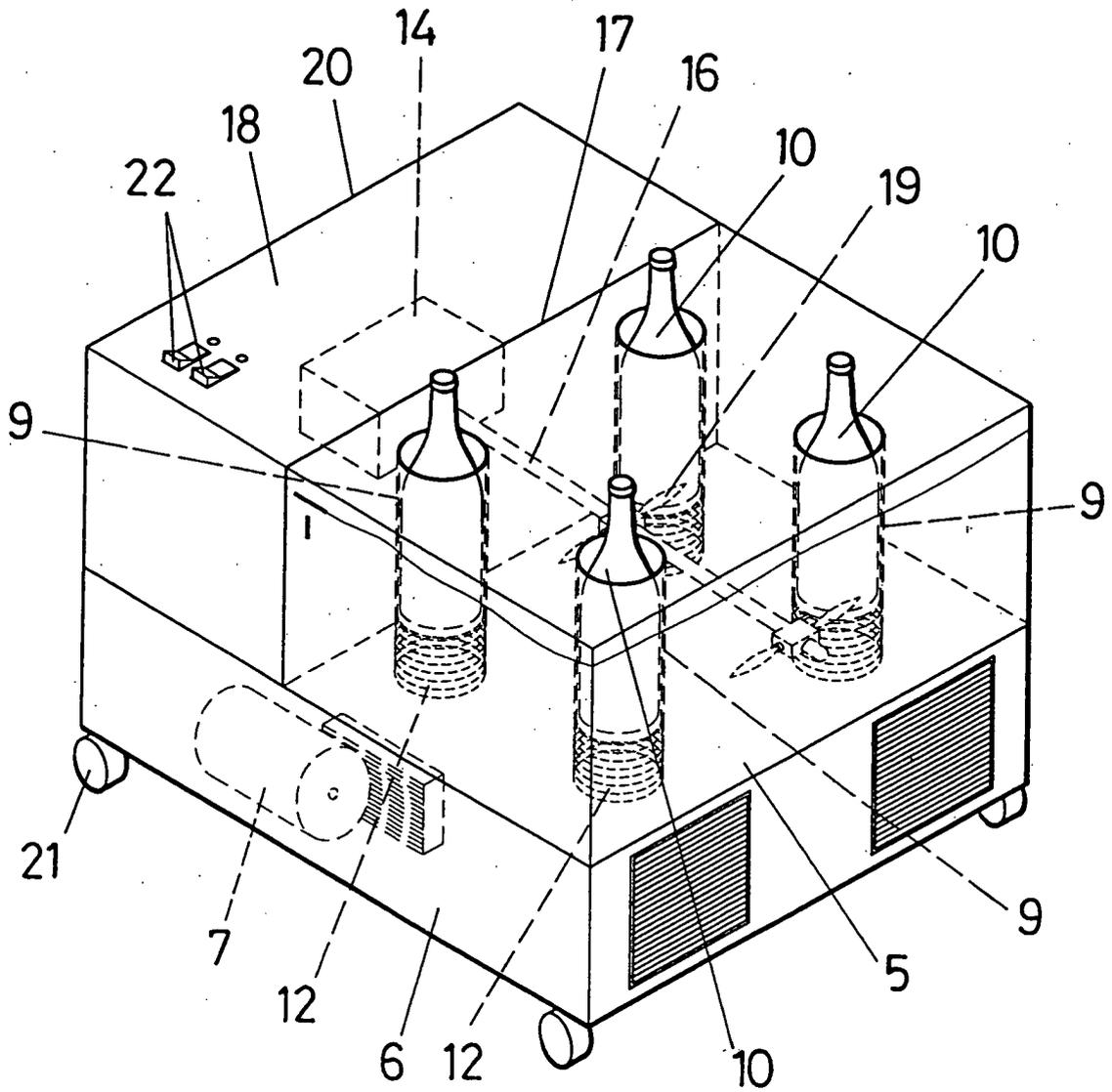


FIG.5

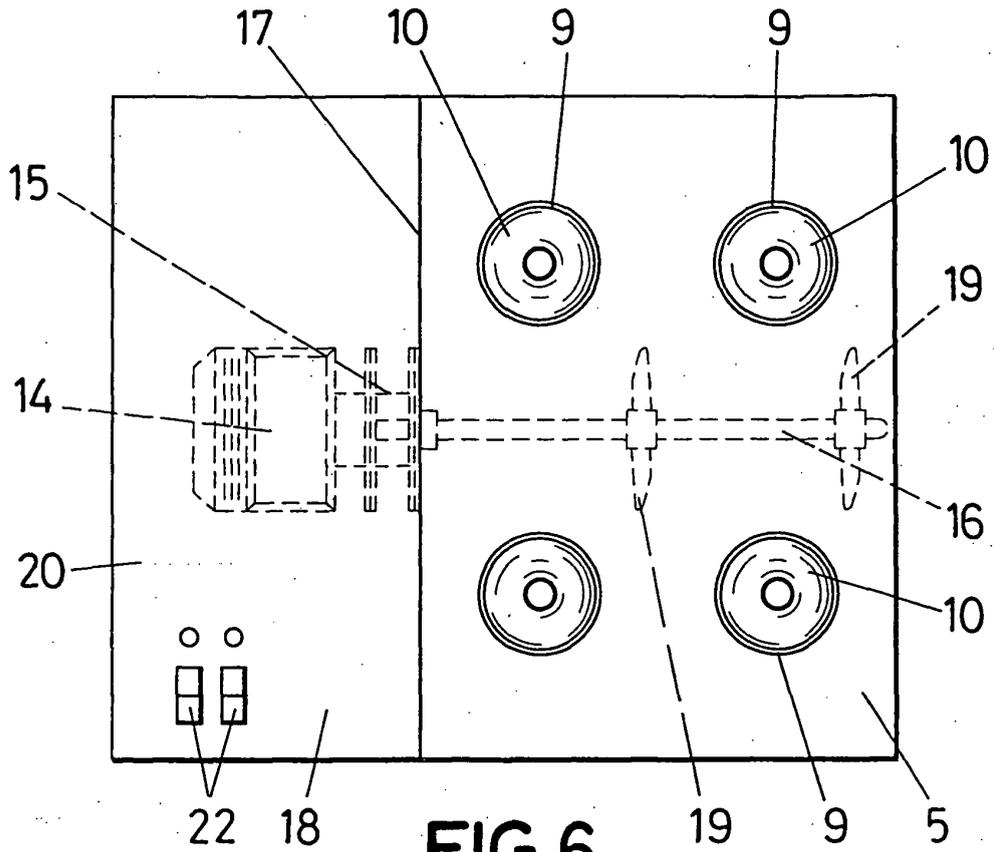


FIG. 6

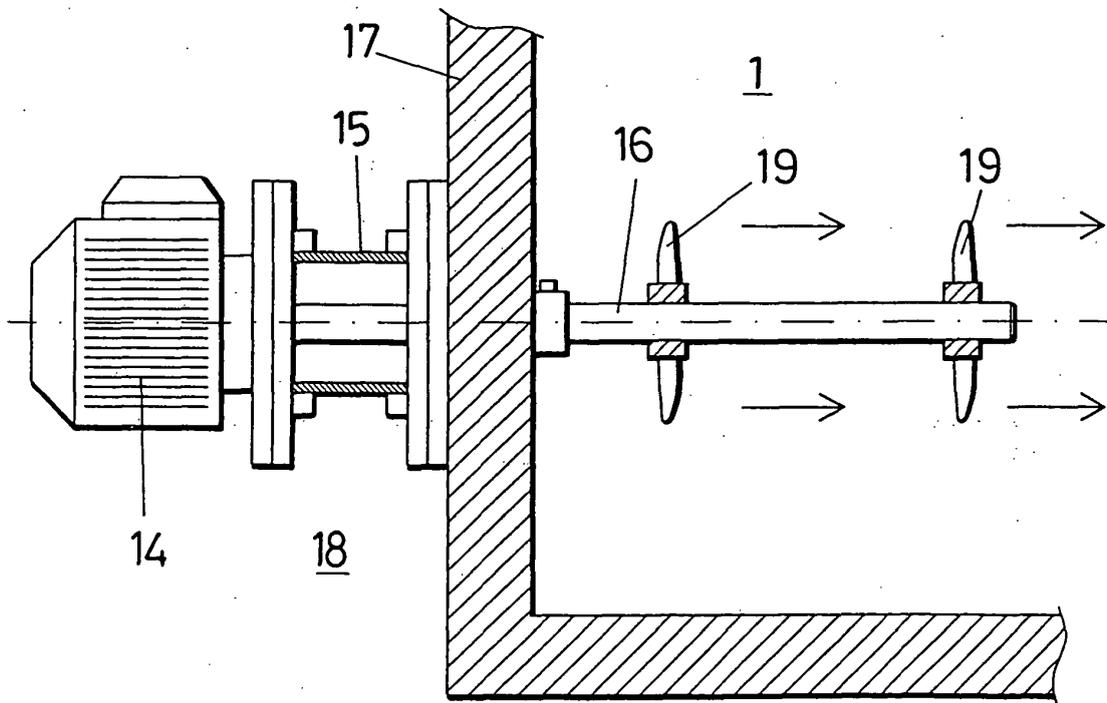


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ ES 2004/000299

A. CLASSIFICATION OF SUBJECT MATTER		
IPC 7 F25D31/00, 11/00		
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 7 F25D, F25B		
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 practicable, search terms used)		
CIBEPAT,EPODOC		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US4920763 A (PROVEST PHILLIP et al) 01.05.1990; column 2, lines 25-44; column 3, lines 13-22, 57-62	1-4,6
Y		5
Y	JP2002168546 A (SANYO ELECTRIC CO) 14.06.2002 (the abstract) (CD-ROM) retrieved from "Patent Abstracts of Japan"	5
X	US5237835 A (BROCHIER YVES) 24.08.1993;	1,6
A	the whole document	2,3
X	DE285521 C (POWALISS SIGMUND) 24.02.1914;	1,6
A	the whole document	2,3
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
15 September 2004 (15.09.04)		07 OCT 2004 07.10.2004
Name and mailing address of the ISA/ S.P.T.O.		Authorized officer
Facsimile No.		Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/ ES 2004/000299

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4920763 A	01.05.1990	WO 8803251 A AU 8176987 A EP 0290512 A EP 19870907288 BR 8707513 A ES 2008290 A JP 6511544 T	05.05.1988 25.05.1988 17.11.1988 23.10.1987 21.02.1989 16.07.1989 22.12.1994 22.12.1994
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JP2002168546 A	14.06.2002	NONE	-----
-----	-----	-----	-----
US 5237835 A	24.08.1993	CA 2038874 A EP 0451063 A EP 19910420104 FR 2660738 AB	06.10.1991 09.10.1991 28.03.1991 11.10.1991 11.10.1991 11.10.1991
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DE 285521 C	24.02.1914	NONE	-----