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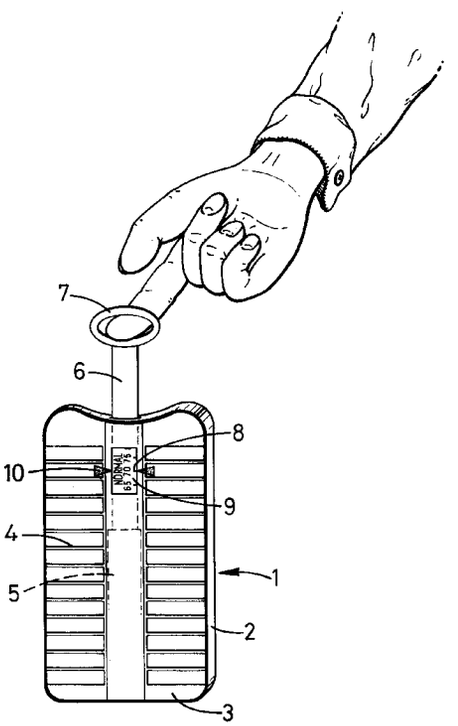
(71) Applicant : **ALFRED DUNHILL LIMITED**
30 Duke Street, St James's
London SW1Y 6DL (GB)

(72) Inventor : **Webb, David Robert**
39 Spurrell Avenue
Bexley, Kent DA5 2HA (GB)

(74) Representative : **West, Alan Harry et al**
R.G.C. Jenkins & Co. 26 Caxton Street
London SW1H 0RJ (GB)

(54) Improvements relating to humidification devices.

(57) A humidification device (1) for use with a container for tobacco or tobacco products such as a humidor, comprises a reservoir (2) adapted to receive and retain liquid water while permitting water vapour to escape, and incorporating means (5-10) enabling the water content of the reservoir to be determined, preferably visually. Those means may include in one embodiment a sight gauge against which the water level can be read ; and in a preferred embodiment a spring balance (5) which enables the weight of reservoir and its contents to be determined.



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This invention relates to humidification devices and has particular reference to the humidification of containers for tobacco and tobacco products such as cigars. Such containers which enable some degree of control to be maintained over the humidity therein are known generally as humidors.

It has long been recognised that the quality of a cigar and its eventual burning characteristics are very intimately associated with the moisture content of the tobacco which in turn depends upon the conditions under which the cigar has been stored between its manufacture and consumption. Thus, if the tobacco is permitted to become dry, then the cigar will burn quickly and at a high temperature. In contrast, if the tobacco becomes too moist, then the cigar will burn very slowly to the extent that it may be difficult to keep it properly alight and will burn at a low temperature. The different burning temperatures will result in quite different combustion products which will have completely different tastes to the smoker and may serious impair his enjoyment of the cigar.

In order to minimise these problems, it has become standard practise to store cigars under controlled atmospheric conditions in a closed cigar box or humidor. This permits the cigar tobacco's inherent moisture content to be retained for the benefit of the smoker but such devices are unfortunately not without their drawbacks. Thus, most humidors require a regular or irregular and usually infrequent addition of liquid water in order to maintain the necessary relative humidity. Failure to add water at the appropriate time will totally negate the effect sought. Also, in relying on liquid water there is a real risk that water will spill during any movement of the humidor. Further, the relative humidity may diminish quite significantly as the amount of remaining water diminishes. Additionally, it is not usually possible to monitor or vary the relative humidity to suit the different inherent moisture levels of different types of tobacco and different smokers' taste requirement.

The present invention seeks to provide a humidification system which is of particular utility to humidors and other closed storage containers, which incorporates means enabling the user readily to monitor and determine the ability of the system to maintain a desired relative humidity within the storage container.

According to one aspect of the invention, therefore, there is provided a reservoir adapted to receive and retain liquid water but permit water vapour to escape, the reservoir incorporating means enabling the water content of the reservoir to be determined. Such means suitably enables the water content to be determined visually, and in a preferred embodiment consists of a spring balance by which the weight of the reservoir and its contents can be quickly and straightforwardly determined. In an alternative embodiment, such means includes a sight gauge against which the water level can be read, by means of a meniscus or a float, for example.

Generally, the reservoir will contain a non-volatile liquid ingredient which serves to control the evaporation of the water and hence regulate the relative humidity within the closed storage container. In common with most humidity control devices present manufactured, the present invention proposes to use glycerine (glycerol) for this purpose although it should be understood that a number of other essentially non-volatile and non-toxic organic materials of a similar nature known for this purpose may be used. Glycerine has the advantages that it mixes with water in all proportions and that at normal room temperatures a 2:1 mixture by weight of glycerine and water will produce a relative humidity of 70% which is virtually ideal for the purpose required in a humidor. Moreover, the relatively large proportion of water in such a mixture makes it a straightforward matter to monitor the water content of the mixture on a weight or volume basis.

As stated above, the water content can be monitored on a volume basis by incorporating into the reservoir a sight gauge. Such a system does, however, mean that a least some of the water, or water/glycerine mixture as the case may be, must be in a free liquid state and this does of course introduce the risk of leakage or spillage from the reservoir. The preferred alternative to this is to monitor the water content on a weight basis and to incorporate into the reservoir a spring balance for this purpose. In this way, the water content of the reservoir can be indicated either directly or, advantageously, indirectly as the relative humidity produced by that water content and if necessary or desired it can also be indicated when more water should be added to reservoir.

When the water content of the reservoir is to be indicated on a weight basis, it is preferred to avoid having the water or water/glycerine mixture in a free liquid state and this can be achieved by absorbing the water or water/glycerine mixture within a porous material, for example a cellular material such as an open foam plastics material, or a fibrous material such as a woven or non-woven fabric. The cellular material may, if desired, be rigid.

The spring balance is suitably arranged to indicate either the water content of the reservoir or, advantageously, the relative humidity that the particular water content will produce. This will enable the user to recognise quickly and reliably whether water needs to be added to the reservoir in order to achieve or maintain a desired relative humidity.

One desing of such a device is illustrated for the purposes of example only in the accompanying drawing. Referring to the drawing, the device indicated generally by the reference numeral 1 consists of a case 2 of plastics or metal alloy construction, containing a slab of rigid cellular plastics material (not shown) containing within its pores a mixture of glycerine and water. The case 2 has a slotted front face 3 (the slots

being indicated at 4) through which liquid water can be absorbed into the cellular material, and through which water vapour can be allowed to escape as the liquid water slowly evaporates. Located centrally along the length of the case 2 is a small spring balance 5 of conventional construction, consisting of a tension spring 6 attached at one end to the case and at the other end to a mounting ring 7 for suspending the whole assembly from a finger, for example. The mounting ring 7 is attached also to an indicator scale 8 which can be viewed through a window 9 in the case 2 and the water content of the device in terms of the relative humidity it will produce can be read from the scale 8 against a marker 10. If the water content is too low, then it can be increased until the desired reading is obtained.

For the sake of convenience, the case has been illustrated as being far larger than it would normally be in practise. The case 2 will normally be some 100 to 200 mm long, 40 to 100 mm wide and probably no more than 30 mm thick. It will probably have an overall weight when fully charged with water of no more than about 250 grams enabling it to be readily accommodated within a conventional humidor.

Claims

1. A humidification device (1) adapted for use within a container for tobacco or tobacco products, the device (1) comprising a reservoir (2) adapted to receive and retain liquid water while permitting water vapour to escape, and incorporating means (5-10) enabling the water content of the reservoir to be determined.

2. A device according to claim 1, wherein the means (5-10) enables the water content to be determined visually (8-10).

3. A device according to claim 2, wherein the means includes a sight gauge against which the water level can be read.

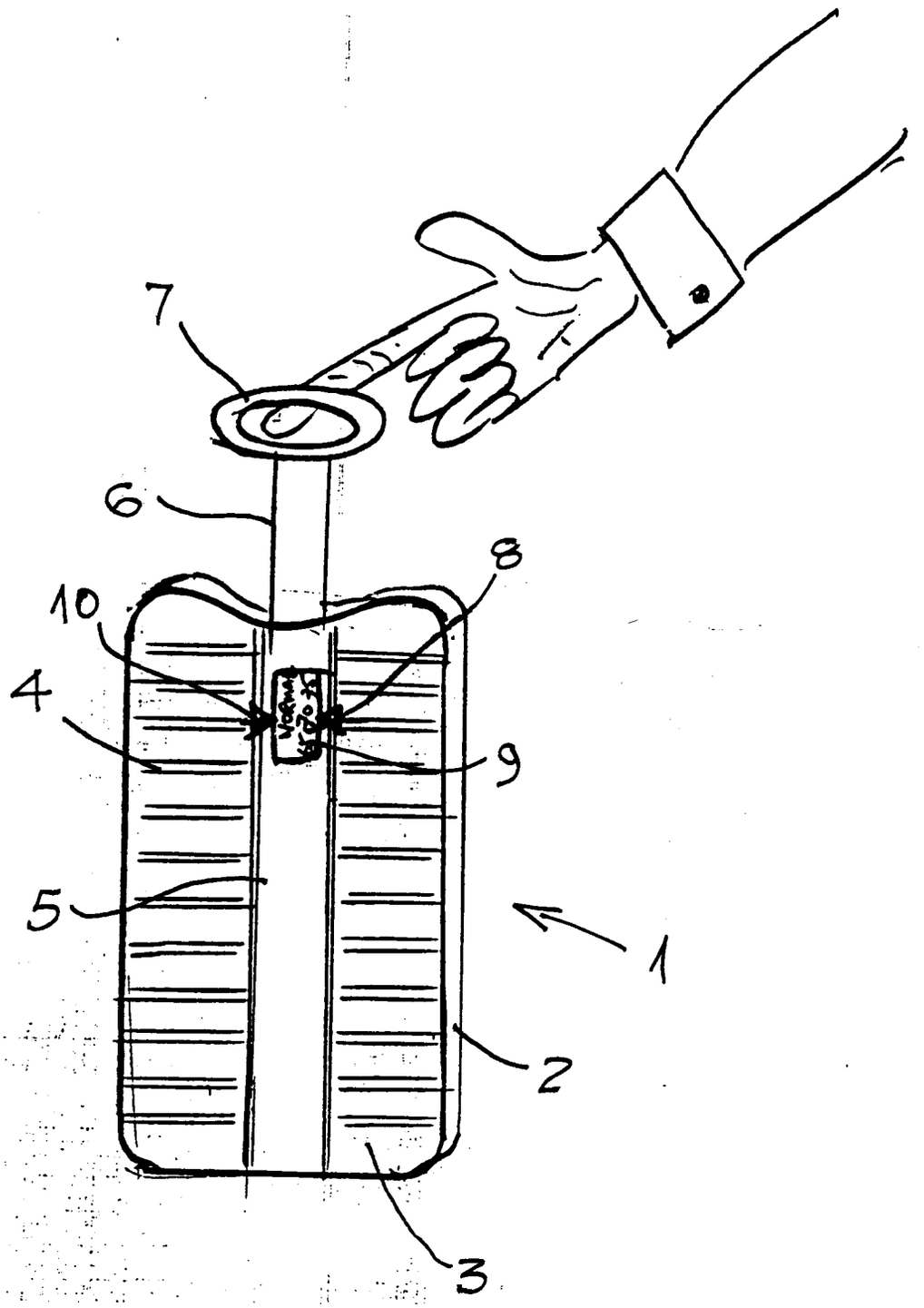
4. A device according to claim 2, wherein the means includes a spring balance (5) which enables the weight of the reservoir and its contents to be determined.

5. A device according to any one of claims 1 to 4, which contains a non-volatile liquid which serves to control evaporation of the water.

6. A device according to claim 5, wherein the non-volatile liquid is glycerol.

7. A device according to any one of claims 4 to 6, wherein the water is absorbed in a material selected from cellular and fibrous materials contained in the reservoir.

8. A humidor which incorporates a humidification device according to any one of claims 1 to 7.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EUROPEAN SEARCH REPORT

Application Number
EP 93 30 1781

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-2 619 397 (RITSCHEL) * the whole document *	1,2	A24F25/02
Y		4-8	
Y	FR-A-2 619 289 (CARAYON) * the whole document *	5-8	
Y	US-A-3 090 454 (FARRAR) * the whole document *	4	
X	FR-A-2 402 164 (LORENZON) * page 3, line 31 - page 4, line 26; figures 1-3 *	1,2	
X	US-A-2 801 892 (LOMBARD) * the whole document *	1,2	
X	US-A-2 958 469 (SHUSTER) * the whole document *	1,2	
X	US-A-2 561 805 (LOMBARD) * column 2, line 45 - column 4, line 7; figures 2,3 *	1-3	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
X	FR-A-1 602 661 (LEONARD) * the whole document *	1,2	A24F A01G A45C B65D
A	GB-A-957 360 (FARQUHAR)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29 JUNE 1993	RIEGEL R.E.

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