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(54) TOBACCO PRODUCT HUMIDIFICATION

(57) According to a first aspect there is provided a humidifier for tobacco products, the humidifier comprising: an absorbent element; and a hydrochromic substance arranged in fluid and/or vapour communication with the absorbent element, the hydrochromic substance being located such that there is a human-perceptible change in the colour of the humidifier between a wet state and a dry state. According to a second aspect there is provided a tobacco product storage container comprising: a tobacco product storage compartment which can be opened and closed; and the humidifier of the first aspect arranged in fluid and/or vapour communication with the tobacco product storage compartment's interior. According to a third aspect there is provided a method of humidifying the tobacco product storage container of the second aspect, the method comprising wetting the absorbent element such that the humidifier undergoes a colour change.

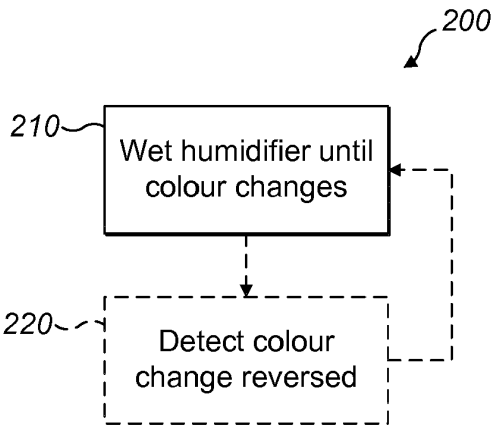

FIG. 2

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Description

FIELD

[0001] The present disclosure relates to humidifying tobacco products.

[0002] More specifically, an aspect relates to a humidifier for tobacco products. Further aspects relate to a tobacco product storage container, a lid for such a tobacco product storage container and methods of humidifying such a tobacco product storage container.

BACKGROUND

[0003] Tobacco products tend to lose their moisture content over time, in particular when their packaging is opened for use. This is a particular problem for loose tobacco, which can be purchased in large formats, such as tubs or buckets, which may be opened many times before their contents are exhausted.

[0004] The moisture content of tobacco can be controlled and optimised using a humidifier, which transfers water vapour to the tobacco material. Such humidifiers are commercially available in the form of pads, for example from Essentra™. Humidifiers can be provided inside tobacco product packaging, for example as a sticker on the underside of a RYO bucket lid, in such a way that they can be wetted by a user. They may be provided wet on purchase, or dry for wetting by the user. They may be single-use, or it may be possible for the user to re-wet them when they dry up.

[0005] However, the user can only determine whether such a humidifier is properly wetted by touching it. Touching the humidifier to determine its wetness can involve inadvertent application of sufficient pressure to squeeze some water out of the humidifier, reducing the quantity of water it holds and thus the time before it will need replacing or re-wetting. It also requires opening the packaging, which can result in loss of water vapour from the packaging head space. Further, in order for the moisture content of the tobacco product to be maintained, the user must remember to repeatedly take the time to open the packaging and feel the wetness of the humidifier.

[0006] What is needed is a way of maintaining the moisture content of tobacco products which avoids the aforementioned disadvantages.

SUMMARY

[0007] According to a first aspect, there is provided a humidifier for tobacco products, the humidifier comprising: an absorbent element; and a hydrochromic substance arranged in fluid and/or vapour communication with the absorbent element, the hydrochromic substance being located such that there is a human-perceptible change in the colour of the humidifier between a wet state and a dry state.

[0008] The hydrochromic substance can be reversible, such that its colour changes from a first colour in the presence of water to a second colour in the absence of water and from the second colour in the absence of water to the first colour in the presence of water.

[0009] The hydrochromic substance can be a hydrochromic ink.

[0010] The absorbent element can be a sponge.

[0011] The hydrochromic substance can be impregnated in the absorbent element.

[0012] The hydrochromic substance can be provided as a coating on the absorbent element's surface.

[0013] The colour of the absorbent element can substantially match the colour of the hydrochromic substance in either the presence or absence of water.

[0014] The hydrochromic substance can be translucent or transparent in the presence of water.

[0015] The hydrochromic substance's colour in the absence of water can be human-perceptibly different to the absorbent element's colour in the absence of the hydrochromic substance, or the hydrochromic substance's colour in the presence of water can be human-perceptibly different to the absorbent element's colour in the absence of the hydrochromic substance.

[0016] The hydrochromic substance can be patterned in and/or on only a portion of the absorbent element, such that the change in colour of the humidifier from the wet state to the dry state, or vice versa, reveals an image or message.

[0017] According to a second aspect there is provided a tobacco product storage container comprising: a tobacco product storage compartment which can be opened and closed; and the humidifier of any preceding claim arranged in fluid and/or vapour communication with the tobacco product storage compartment's interior.

[0018] The container can comprise at least a portion of an external wall which is transparent or translucent, arranged such that the colour of the humidifier can be observed while the tobacco product storage compartment is closed.

[0019] The container can comprise a humidifier compartment which can be opened and closed independently from the tobacco product storage compartment, said humidifier compartment housing the humidifier.

[0020] According to a third aspect there is provided a method of humidifying the tobacco product storage container of the second aspect, the method comprising wetting the absorbent element such that the humidifier undergoes a colour change.

[0021] The method can further comprise: at a later time detecting that the colour change has reversed; and responsive thereto, re-wetting the absorbent element such that the humidifier undergoes a further colour change.

[0022] According to a fourth aspect there is provided a lid for closing a tobacco product storage container, the lid comprising a humidifier compartment configured to contain a humidifier, the lid having first and second opposing sides, wherein: the first side comprises a porous wall of the humidifier compartment configured to permit

egress of water and/or water vapour from the humidifier compartment; and the second side comprises a closure of the humidifier compartment configured to permit access to its interior and further configured to prevent egress of water and/or water vapour from the humidifier compartment.

[0023] The closure can be transparent or translucent, such that the interior of the humidifier compartment is visible when the closure is closed.

[0024] The porous wall of the humidifier compartment can be porous by virtue of it comprising one or more through-holes.

[0025] The closure can comprise a closure peripheral sealing structure, and the second side can further comprise a sealing feature configured to engage with the closure peripheral sealing structure so as to seal the humidifier compartment closed.

[0026] The closure peripheral sealing structure can comprise a gasket.

[0027] The closure peripheral sealing structure and the sealing feature of the second side can be configured to engage one another in a snap fit such that a user receives audible and/or haptic feedback when the closure is closed.

[0028] The second side can further comprise a hinge connecting the closure to the humidifier compartment.

[0029] The hinge can be configured to permit the closure to rotate about greater than 90° such that, when in use, once fully opened the closure will remain open under the action of its own weight.

[0030] The humidifier compartment may only extend across a portion of the lid's footprint.

[0031] The humidifier compartment can form a protrusion on the first side but not the second side.

[0032] The closure can be arranged to be levered open by a user's finger by means of: a grip portion extending out of the closure's external side; or a recess in the lid's second side which is adjacent an edge of the closure when closed; or a grip portion extending out of the closure's external side, located towards an edge of the closure which is adjacent a recess in the lid's second side when the closure is closed.

[0033] The lid can further comprise a humidifier in the humidifier compartment.

[0034] The humidifier can comprise an absorbent element.

[0035] The humidifier can further comprise a hydrochromic substance arranged in fluid and/or vapour communication with the absorbent element, the hydrochromic substance being located such that there is a human-perceptible change in the colour of the humidifier between a wet state and a dry state.

[0036] According to a fifth aspect, there is provided a tobacco product storage container comprising the lid of the fourth aspect.

[0037] According to a sixth aspect there is provided a method of humidifying the tobacco product storage container of the fifth aspect, the method comprising: opening the closure; wetting the humidifier; and closing the closure.

[0038] The wetting of the humidifier can cause it to undergo a colour change, the method further comprising: at a later time, detecting that the colour change has reversed; and responsive thereto, repeating the method steps.

BRIEF DESCRIPTION OF THE FIGURES

[0039] Aspects of the present disclosure will now be described by way of example with reference to the accompanying figures. In the figures:

Figure 1A illustrates an example tobacco product storage container;

Figure 1B is a close-up view of the humidifier compartment of the container of Figure 1A with the humidifier compartment closure open;

Figure 1C is a close-up view of the humidifier compartment of the container of Figure 1A with the humidifier compartment closure closed;

Figure 1D shows a vertical cross section of the container of Figure 1A;

Figure 1E shows the underside of the lid of the container of Figure 1A;

Figure 2 is a flowchart illustrating an example method of humidifying a tobacco product storage container; and

Figure 3 is a flowchart illustrating a further example method of humidifying a tobacco product storage container.

DETAILED DESCRIPTION

[0040] The following description is presented to enable any person skilled in the art to make and use the system, and is provided in the context of a particular application. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art.

[0041] The terms "top", "bottom", "side", "front", "back", "forward", "rear" and other terms describing the orientation of features are not intended to be limiting and are purely included in order to facilitate the description of the relative location of these features in the context of the accompanying drawings. In use, or during storage, the features may be disposed in other orientations.

[0042] According to one aspect of the disclosure it is proposed to provide a humidifier for tobacco products, configured to indicate its moisture level to a user visually. This is achieved using a hydrochromic substance, which undergoes a colour change as it is wetted and/or as it dries. A user can therefore see that the humidifier is properly wetted and ready for use, or has dried up and needs to be either replaced or re-wetted, without needing to touch it. Such a humidifier can comprise an absorbent element as well as a hydrochromic substance arranged in fluid and/or vapour communication with the absorbent

element. The hydrochromic substance is located such that there is a human-perceptible change in the colour of the humidifier between a wet state and a dry state.

[0043] In the wet state, the absorbent element is above a first saturation level, preferably below 100% to prevent water dripping. In the dry state, the absorbent element is below a second saturation level, lower than the first saturation level, but preferably contains some amount of water to alert a user when to refill the humidifier before the loose tobacco starts to dry out. The first saturation level may be comprised between 50% and 100%. The second saturation level may be comprised between 0% and 50%.

[0044] Hydrochromic substances can be one-way, changing from one colour when dry to another when wet, or vice-versa, with the colour remaining fixed after a single change. Such a one-way hydrochromic substance can be used to provide a visual indication to the user that they have sufficiently wetted a new humidifier for use. Alternatively, if the humidifier is provided wet then a one-way hydrochromic substance can be used to indicate to the user when the humidifier has dried out and needs replacing or re-wetting.

[0045] Some hydrochromic substances are reversible, such that their colour changes from a first colour in the presence of water to a second colour in the absence of water and from the second colour in the absence of water to the first colour in the presence of water. These substances are particularly useful for humidifiers which are intended to be re-wetted one or more times by the user as they can indicate both when the humidifier is properly wetted and ready for use, and when it has dried out and should be re-wetted.

[0046] In other words, hydrochromic substances have a first colour in the presence of water (wet state), and a second colour in the absence of water (dry state). One-way hydrochromic substances only allow one colour change between the first and second colour, while reversible hydrochromic substances allow multiple changes between the first and second colours.

[0047] In use, when the humidifier is in the wet state, the hydrochromic substance displays the first colour. As the humidifier dries up, some areas of the hydrochromic substance remain wet but others have already dried up, and therefore the humidifier presents areas of different colours. This is indicative that the humidifier is starting to dry up and that it will soon be necessary to refill it. If the user does not refill the humidifier, it will continue to dry and the hydrochromic substance will eventually be dry and display the second colour. At this point in time the user should refill the humidifier to prevent the tobacco from drying.

[0048] Preferably, the hydrochromic substance is a hydrochromic ink. The hydrochromic ink preferably comprises hydrochromic pigments in a carrier medium, which is preferably aqueous based. The hydrochromic ink may comprise hydrochromic pigments suspended in acrylic polymer emulsion, preferably an aqueous based acrylic polymer emulsion. Hydrochromic inks may further comprise other components typically present in inks, such as solvents, binders, humectants, surfactants, biocides, buffers, lubricants, dyes or non-hydrochromic pigments.

[0049] Hydrochromic pigments may be reversible or irreversible. Reversible hydrochromic pigments change between two colours depending on whether they are wet or dry, as explained above. Irreversible hydrochromic pigments can either change once between two colours when in contact with water, as explained above, or dissolve in water (water-soluble colour pigments).

[0050] The absorbent element is capable of absorbing water and also of emitting water by evaporation. It can be made from any suitable material meeting these requirements, such as natural and/or synthetic materials, for example a polymer, e.g. polyolefin, polyethylene or polypropylene, a cellulosic material or a combination thereof. It could for example comprise polyethylene terephthalate (PET) and/or polylactic acid (PLA). Alternatively or additionally it could comprise one or more of cellulose, paper and cotton. The absorbent element can be porous, for example a sponge material. It can be formed of one continuous piece or multiple pieces. The absorbent element can be any suitable size or shape.

[0051] The hydrochromic substance can be impregnated in the absorbent element. Alternatively or additionally, it could be provided as a coating on the absorbent element's surface, for example using screen printing techniques such as silk screen printing.

[0052] The hydrochromic substance can for example be translucent or transparent in the presence of water. In that case, its colour in the absence of water can be human-perceptibly different to the absorbent element's colour in the absence of the hydrochromic substance. For example, the hydrochromic substance could be white when dry, but the absorbent element could be blue or green.

[0053] The colour of the absorbent element can substantially match the colour of the hydrochromic substance in the wet state. In that case, its colour in the absence of water can be human-perceptibly different to the absorbent element's colour in the absence of the hydrochromic substance. For example, the absorbent element could be green and the hydrochromic substance is green when dry and white when wet.

[0054] The colour of the absorbent element can substantially match the colour of the hydrochromic substance in the dry state. In that case, its colour in the presence of water can be human-perceptibly different to the absorbent element's colour in the absence of the hydrochromic substance. For example, the absorbent element could be white and the hydrochromic substance is green when dry and white when wet.

[0055] The hydrochromic substance can be patterned in and/or on only a portion of the absorbent element, such that the change in colour of the humidifier from its wet state to its dry state, or vice versa, reveals an image or message. For example, the instruction "REFILL ME", the

message "I'M THIRSTY", a sun symbol or a cross could appear as the humidifier dries out, or a water droplet symbol or tick could appear as the humidifier is (re)wetted.

[0056] In use in a tobacco product storage container, the humidifier can be arranged in fluid and/or vapour communication with the interior of a tobacco product storage compartment which can be opened and closed. The container could be transparent or translucent, at least in part, to allow the humidifier to be seen while the tobacco product storage compartment is closed. For example, the humidifier could be located on the underside of a transparent lid, or adjacent a transparent window in a wall. The user therefore need not open the tobacco product storage compartment to determine whether the humidifier is sufficiently wet, saving time and avoiding the risk of losing water vapour from the tobacco product storage compartment's headspace. They can also be alerted to the state of the humidifier by glancing at the container, reducing the burden on them to remember to check.

[0057] If the container comprises a humidifier compartment which can be opened and closed independently from the tobacco product storage compartment then the humidifier can be inserted, wetted, removed, replaced and re-wetted as required without ever opening the tobacco product storage compartment.

[0058] According to a further aspect of the disclosure it is proposed to provide a lid for closing a tobacco product storage container, the lid comprising a compartment configured to contain a humidifier. The humidifier compartment can be opened to provide access to its interior and sealed closed, for example by means of a closure peripheral sealing structure which is configured to engage with a sealing feature on the lid. The humidifier compartment has a porous wall which, in use, faces the tobacco product such that the headspace above the tobacco product is humidified by water vapour evaporated from the humidifier and/or water which has dripped out of the humidifier. The humidifier compartment closure is arranged on the opposite side of the lid to the porous wall so that the humidifier compartment can be opened independently from the tobacco product storage container. This arrangement allows the humidifier to be inserted, wetted, removed, replaced and re-wetted as required without ever opening the tobacco product storage container. This saves the user time and avoids the risk of losing water vapour from the tobacco product storage compartment's headspace.

[0059] The tobacco product storage container could for example be in the form of a bucket or tub, with the lid configured to close off an upper opening. The opening could be an aperture in a ceiling of the container, or the container could simply have no ceiling.

[0060] The humidifier could be a colour-changing humidifier as described above.

[0061] If the closure is transparent or translucent, such that the interior of the humidifier compartment is visible when the closure is closed, then the user can easily ascertain the location of the humidifier and readily understand that it can be accessed without opening the tobacco product storage container, even if they are unfamiliar with this type of lid. If the humidifier is a colour-changing humidifier as described above then they can also be alerted to the state of the humidifier by glancing at the container, reducing the burden on them to remember to check.

[0062] The porous wall of the humidifier compartment can be porous by virtue of it comprising one or more through-holes, for example if the humidifier compartment is formed predominantly of moulded plastic.

[0063] The closure peripheral sealing structure can comprise a gasket to form a substantially watertight seal.

[0064] The closure peripheral sealing structure can be configured to engage with the sealing feature in a snap fit such that a user receives audible and/or haptic feedback when they close the closure. That is, the closure may "click" closed.

[0065] The humidifier compartment closure can for example be provided as a stopper or plug, or as a hinged door. If it is hinged then the hinge can be configured to permit the closure to rotate about greater than 90°, such that, when in use (assuming the lid is substantially horizontal in use), once fully opened the closure will remain open under the action of its own weight.

[0066] The humidifier compartment could extend across substantially the entirety of the lid's footprint such that it fills the upper opening of the tobacco product storage container. Alternatively, the humidifier compartment could only extend across a portion of the lid's footprint, forming a protrusion on its lower side sized to fit the humidifier, reducing the quantity of material used to form the compartment.

[0067] The closure can be provided with a grip portion extending out of its external side so that it can be gripped by a user to pull it open. Alternatively or additionally, a recess could be provided in the external side of the lid adjacent an edge of the closure so that the user can place their finger in the recess to push against the edge of the closure and lever it up. These features could be provided in combination, with the grip portion located towards the edge of the closure so that the user can hook their finger into the recess and under the grip portion to lever the closure open.

[0068] Figures 1A to 1E illustrate an example tobacco product storage container 100 comprising a tobacco product storage compartment 110 having a rim 111 and a handle 112. The tobacco product storage compartment 110 is closed by a lid 120 having an integrated humidifier compartment 130. Figure 1A shows the container 100 closed, with a transparent plastic closure 131 of the humidifier compartment 130 also closed over a humidifier 140. (The same view is shown in close-up in Figure 1C which will be described in detail below.)

[0069] Figure 1B is a close-up view of the humidifier compartment 130 with the closure 131 open to provide access to the humidifier 140 which, as can be seen from this figure, is a sponge. Also visible in this figure is a gasket 132 around the periphery of the closure 131,

which provides a substantially watertight seal when the closure 131 is closed. This could alternatively be provided around the edges of an aperture in the lid 120 that the closure 131 closes. The closure 131 is hinged to one edge of the aperture in the lid 120 in such a way that when the closure 131 has been fully opened as shown, it rests at an acute angle to the plane of the main body of the lid 120, which in use is substantially horizontal. The closure 131 thus stays open unaided so that the humidifier 140 can be easily inserted, (re)wetted or removed.

[0070] As can be seen more clearly in Figure 1C, where the closure 131 is closed, a grip portion 133 extends from the exterior side of the closure 131. This acts as a finger-operated handle to lift the closure open.

[0071] Figure 1D shows a vertical cross section of the container 100 with both the tobacco product storage compartment 110 and the humidifier compartment 130 closed.

[0072] The detail on the humidifier compartment 130 shows the humidifier 140 substantially filling the humidifier compartment 130. The humidifier compartment 130 is sized such that the humidifier 140 fits snugly inside it when saturated. The humidifier 140 will then shrink a little as it dries.

[0073] The floor of the humidifier compartment 130 is provided as a perforated wall 134 to allow water vapour which evaporates from the humidifier 140 to pass into the headspace of the tobacco product storage compartment 110.

[0074] Figure 1E shows the underside of the lid 120, i.e. the side that faces the tobacco product storage compartment 110 when the container 100 is closed. A peripheral recess 121 is shown, which is configured to engage with the rim 111 of the tobacco product storage compartment 110 to close the container 100. The detail on the underside of the humidifier compartment 130 shows a pattern of holes in the perforated wall 134. Although holes are shown arranged in a concentric circular pattern, other patterns are possible, such as a matrix of holes in regular rows and columns.

[0075] Figure 2 is a flowchart illustrating an example method 200 of humidifying a tobacco product storage container such as the container 100 of Figure 1. At step 210 the absorbent element is wetted such that the humidifier 140 undergoes a colour change. The user observes the colour change, and therefore knows when to stop adding water. This can be done with the humidifier 140 already in place in the tobacco product storage container 100, or the humidifier can be put in place after wetting.

[0076] If the humidifier comprises a reversible hydrochromic substance and is configured to be reusable, at a later time the user detects that the colour change has reversed at step 220. In response to this, the wetting step 210 is repeated such that the humidifier undergoes a further colour change. Again, the humidifier 140 may be left in place to be wetted, or may be removed from the tobacco product storage container 100 to be re-wetted, and then replaced once this is complete. This cycle can continue until the supply of tobacco product in the container 100 is exhausted (or even beyond that, if the container 100 is refillable).

[0077] Figure 3 is a flowchart illustrating a further example method 300 of humidifying a tobacco product storage container such as the container 100 of Figure 1. At step 310 the closure 131 of the humidifier compartment 130 is opened. Next, at step 320 the humidifier 140 is wetted. This may occur with the humidifier 140 in place in the humidifier compartment 130, or it may be removed for wetting then replaced. At step 330 the closure 131 is closed.

[0078] If the humidifier 140 is configured to be re-usable then steps 310 to 330 may be repeated every time the user detects that the humidifier 140 has dried up, until the supply of tobacco product in the container 100 is exhausted (or even beyond that, if the container 100 is refillable). Such user detection may be performed by the user touching the humidifier 140 in between steps 310 and 320. Alternatively, if the humidifier 140 comprises a reversible hydrochromic substance such that the wetting of the humidifier 140 at step 320 causes it to undergo a colour change, the method 300 can further comprise a step 340 of, at a later time than step 330, detecting that the colour change has reversed. The flow then returns to step 310 in response to this.

[0079] Other embodiments will be apparent to those skilled in the art from consideration of the specification and practice of the embodiments disclosed herein. It is intended that the specification and examples be considered as exemplary only.

[0080] In addition, where this application has listed the steps of a method or procedure in a specific order, it could be possible, or even expedient in certain circumstances, to change the order in which some steps are performed, and it is intended that the particular steps of the method or procedure claims set forth herein not be construed as being order-specific unless such order specificity is expressly stated in the claim. That is, the operations/steps may be performed in any order, unless otherwise specified, and embodiments may include additional or fewer operations/steps than those disclosed herein. It is further contemplated that executing or performing a particular operation/step before, contemporaneously with, or after another operation is in accordance with the described embodiments.

Claims

1. A humidifier for tobacco products, the humidifier comprising:

   an absorbent element; and
   a hydrochromic substance arranged in fluid and/or vapour communication with the absorb-

ent element, the hydrochromic substance being located such that there is a human-perceptible change in the colour of the humidifier between a wet state and a dry state.

2. The humidifier of claim 1, wherein the hydrochromic substance is reversible, such that its colour changes from a first colour in the presence of water to a second colour in the absence of water and from the second colour in the absence of water to the first colour in the presence of water.

3. The humidifier of either of claims 1 or 2, wherein the hydrochromic substance is a hydrochromic ink.

4. The humidifier of any of claims 1 to 3, wherein the absorbent element is a sponge.

5. The humidifier of any preceding claim, wherein the hydrochromic substance is impregnated in the absorbent element.

6. The humidifier of any preceding claim, wherein the hydrochromic substance is provided as a coating on the absorbent element's surface.

7. The humidifier of any preceding claim, wherein the colour of the absorbent element substantially matches the colour of the hydrochromic substance in either the presence or absence of water.

8. The humidifier of any preceding claim, wherein the hydrochromic substance is translucent or transparent in the presence of water.

9. The humidifier of any preceding claim, wherein the hydrochromic substance's colour in the absence of water is human-perceptibly different to the absorbent element's colour in the absence of the hydrochromic substance, or wherein the hydrochromic substance's colour in the presence of water is human-perceptibly different to the absorbent element's colour in the absence of the hydrochromic substance.

10. The humidifier of any preceding claim, wherein the hydrochromic substance is patterned in and/or on only a portion of the absorbent element, such that the change in colour of the humidifier from the wet state to the dry state, or vice versa, reveals an image or message.

11. A tobacco product storage container comprising:

a tobacco product storage compartment which can be opened and closed; and
the humidifier of any preceding claim arranged in fluid and/or vapour communication with the tobacco product storage compartment's interior.

12. The container of claim 11, comprising at least a portion of an external wall which is transparent or translucent, arranged such that the colour of the humidifier can be observed while the tobacco product storage compartment is closed.

13. The container of either of claims 11 or 12, comprising a humidifier compartment which can be opened and closed independently from the tobacco product storage compartment, said humidifier compartment housing the humidifier.

14. A method of humidifying the tobacco product storage container of any of claims 11 to 13, the method comprising wetting the absorbent element such that the humidifier undergoes a colour change.

15. The method of claim 14 as dependent on claim 2, further comprising:

at a later time detecting that the colour change has reversed; and
responsive thereto, re-wetting the absorbent element such that the humidifier undergoes a further colour change.

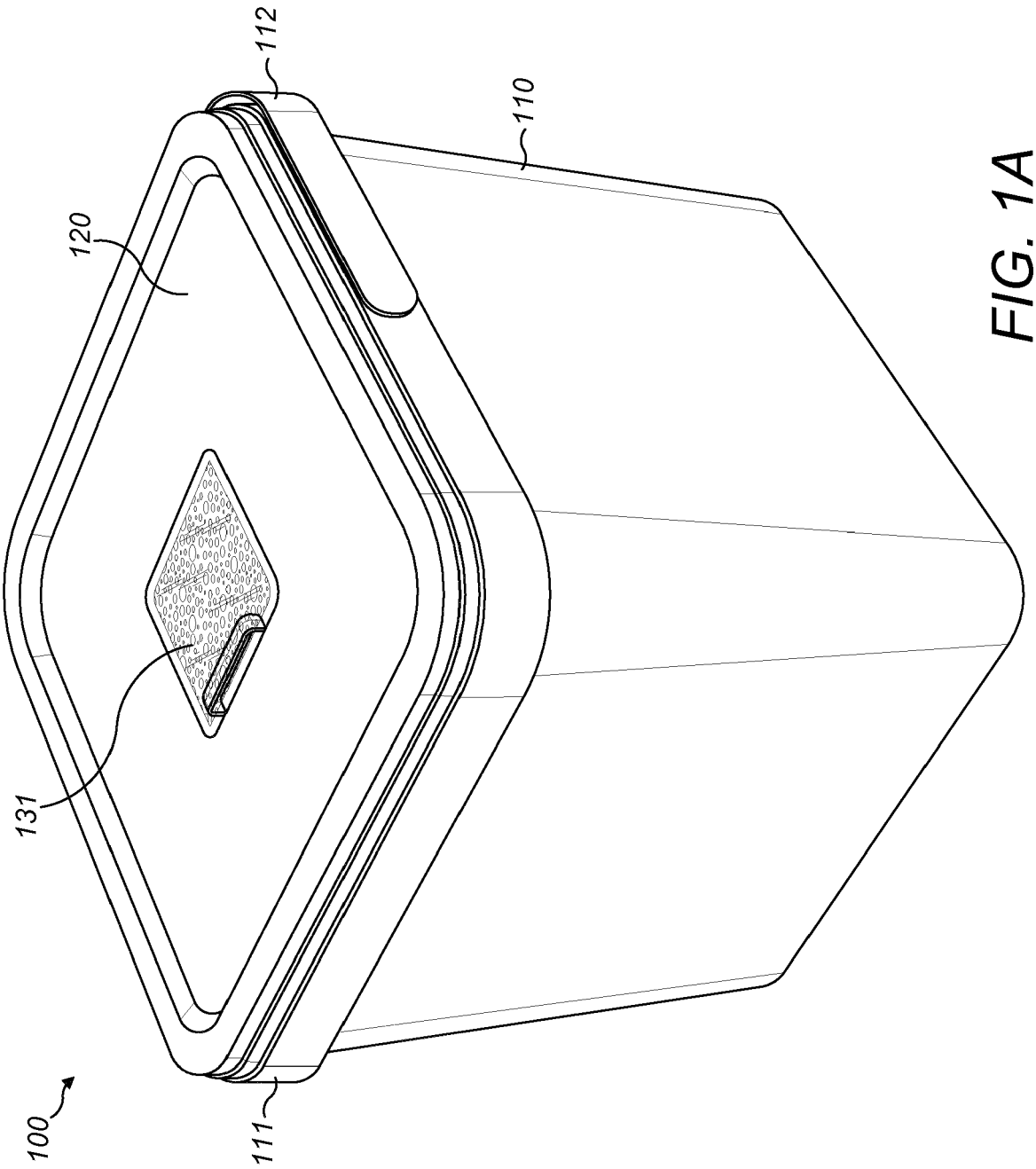

FIG. 1A

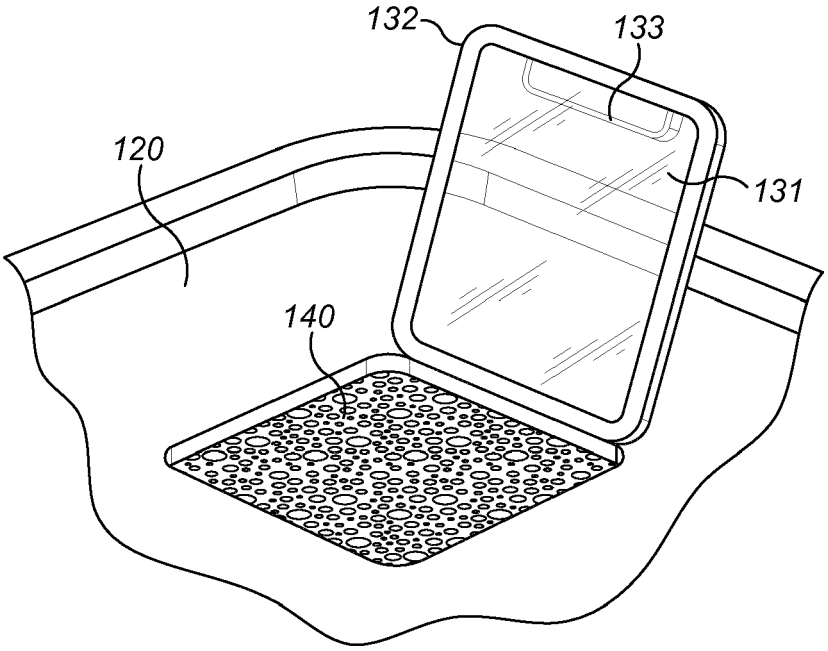

FIG. 1B

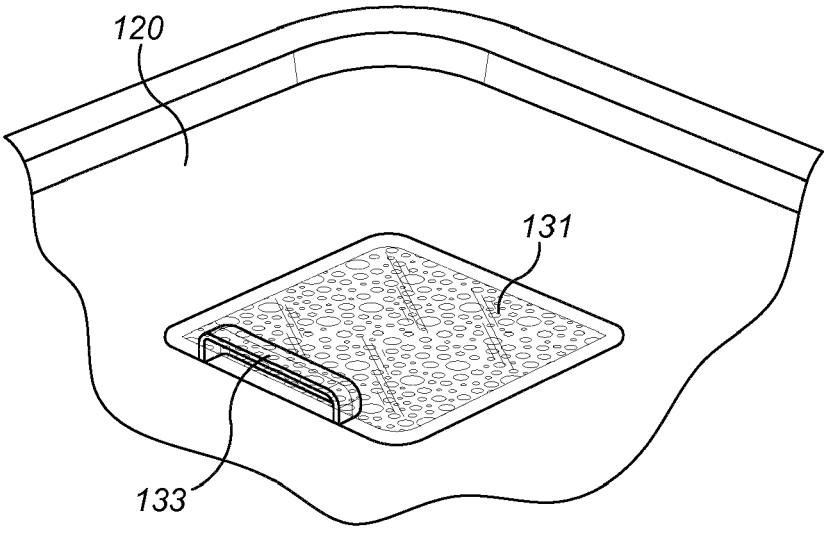

FIG. 1C

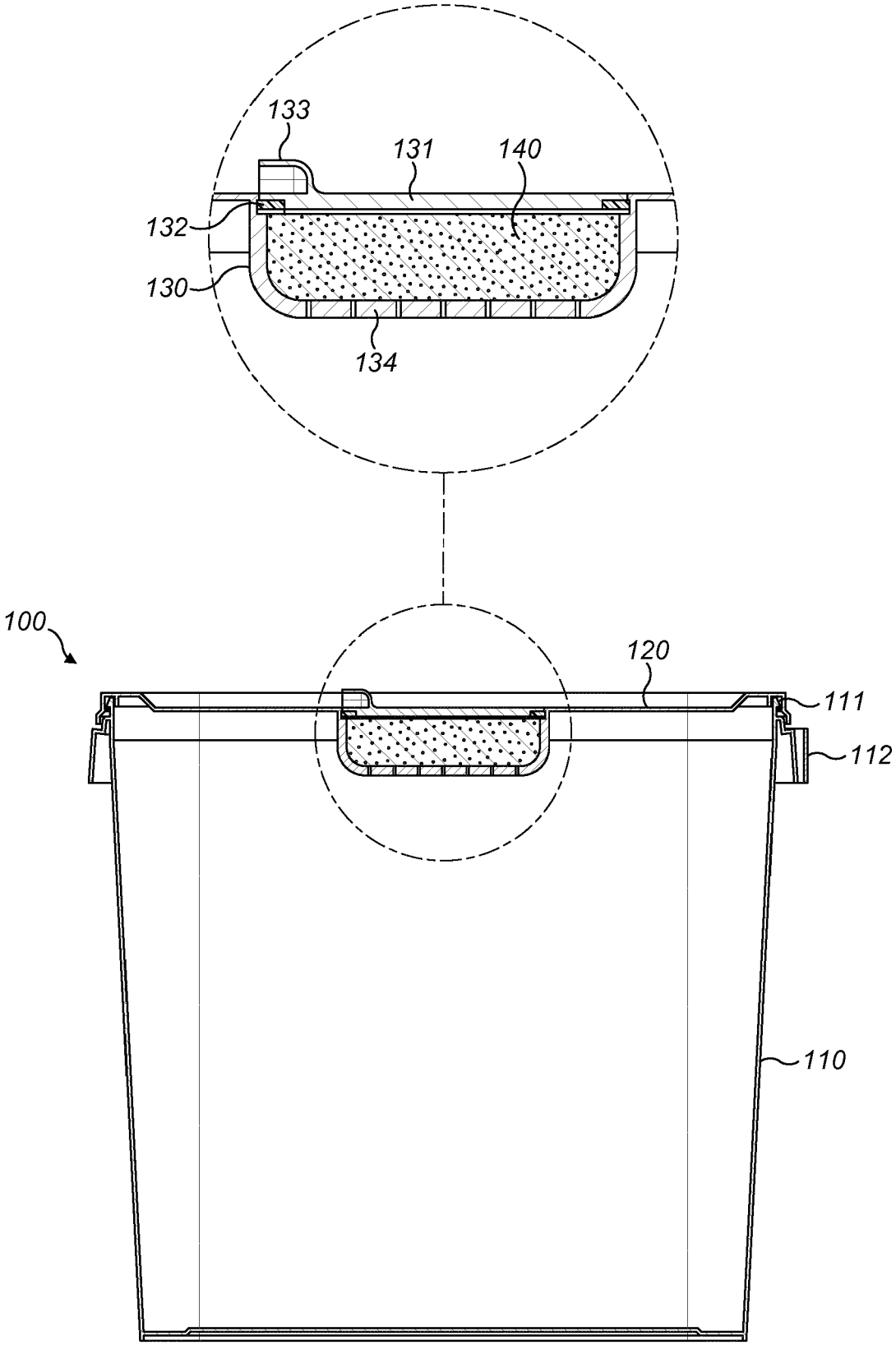

FIG. 1D

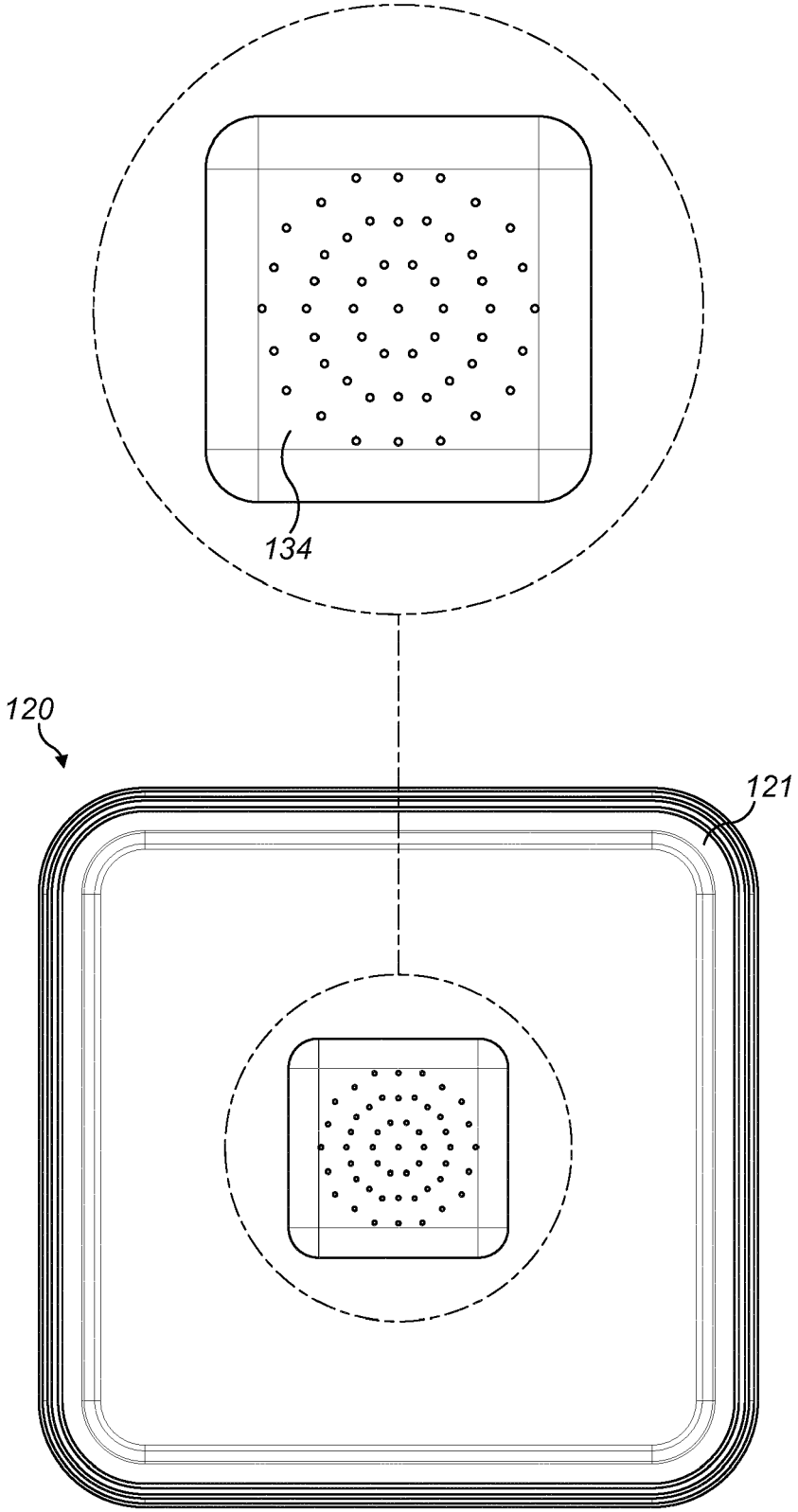

FIG. 1E

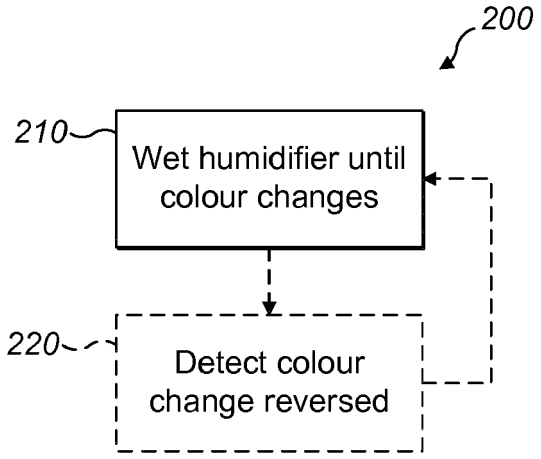
200
210
Wet humidifier until colour changes
220
Detect colour change reversed

FIG. 2

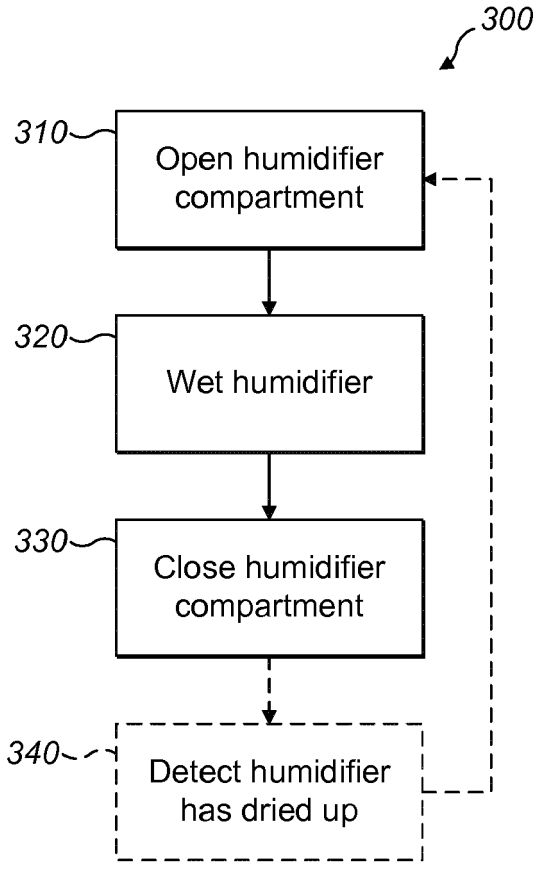
300
310
Open humidifier compartment
320
Wet humidifier
330
Close humidifier compartment
340
Detect humidifier has dried up

FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 19 15 1242

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A24B
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 July 2019	Coniglio, Carlo

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