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(54) Tubes and tubular containers

(57) A tubular container 1 comprises a tubular body 1 having an inner sleeve 4, an outer strip 6 spirally wound about, and bonded to, the sleeve 4, a top cap 8 and a bottom cap 10. The inner sleeve 4 is made from a spirally wound strip of transparent PET (Polyethylene Terephthalate) and the outer strip 6 is made from a board material, for example paperboard or cardboard. The inner sleeve 4 is exposed between the turns of the outer strip 6, which means that the container contents, for example a bottle 12, can be seen through a spiral window 14 defined between the turns of the strip 6.

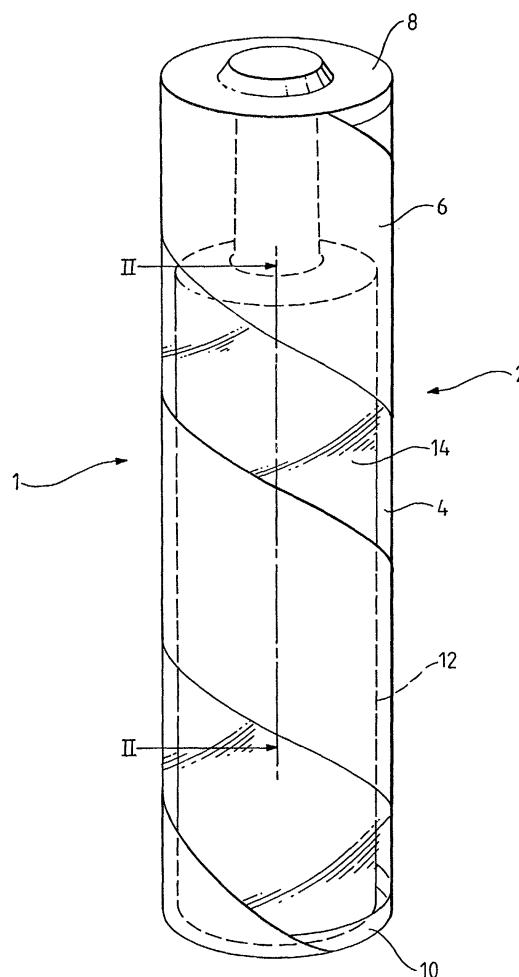


FIG. 1

Description

[0001] The present invention relates to tubes and tubular containers.

[0002] Containers of this type are used for a range of products, for example perfumes, alcoholic beverages and so on. The containers are normally made of cardboard or paperboard, and may be formed by spirally wrapping plies of material together into a tube, or by forming a suitably shaped blank into a tubular shape. In some containers, a window is provided so that the contents of the container may be viewed.

[0003] The present invention seeks to provide a new construction of tube and tubular container.

[0004] According to a first aspect, the invention provides a tube or tubular container comprising an inner tubular sleeve and an outer strip of material spirally wound around the sleeve such that the inner sleeve is exposed between the turns of the outer strip.

[0005] Such a construction is advantageous in that it affords the container designer greater design freedom. For example, the material of the inner sleeve may be different to that of the outer strip, and/or have a different texture, and/or decoration and so on.

[0006] The inner sleeve may be formed in any convenient manner. Preferably, however, it is formed by spirally winding at least one, inner, strip of material.

[0007] From a second broad aspect, therefore, the invention provides a tube or tubular container comprising at least two spirally wound, inner and outer, strips, a portion of the inner strip being visible between the turns of the outer strip.

[0008] In one embodiment, the inner strip may be dimensioned and wound so that the edges of its adjacent turns are spaced from one another. Preferably, however, the winding pitch and the width of the inner strip is such that, when wound, the edges of the strip abut or overlap so as to provide a substantially continuous sleeve. Where they overlap the turns may be bonded together.

[0009] In either arrangement above, however, the turns of the inner strip are preferably joined together by the outer strip wound around them. Preferably, therefore, the outer strip is positioned such that it covers the joint between the turns of inner strip, and the outer strip bonded to the inner strip, for example by a PVA or hot melt adhesive.

[0010] It will be appreciated that the amount of the inner sleeve or strip which is exposed between the turns of the outer wound strip will depend on the relative widths of the inner and outer strips, and generally the outer strip will be narrower than the inner strip. The wider the outer strip is made, the less of the inner sleeve or strip will be visible.

[0011] The outer strip may have straight edges, or a profiled edge if a more fanciful design is sought.

[0012] As stated above, the materials or properties of the inner sleeve or strip and the outer strip may be different. However both the inner strip or sleeve and the

outer strip may be made from the same material, for example a board material. In the preferred embodiment, however, the inner sleeve or strip is made from a plastics material.

[0013] Preferably the inner sleeve or strip is wholly or at least in part transparent or translucent so that the contents of the container can be viewed between the turns of the outer strip, giving the effect of a spiral window in the container. Such an arrangement is easier to manufacture than existing window arrangements. Preferably the outer strip is of a board material.

[0014] The plastics material may be a polyester material, acetate, polyethylene or any other suitable material and it may be coloured or patterned, if desired. PET is an example of a suitable material.

[0015] As stated above, the preferred construction is one in which the inner sleeve is formed by winding. From another broad aspect, therefore, the invention provides a method of manufacturing a tube or tubular container comprising winding at least one, inner, strip of material around a mandrel and then winding a second, outer, strip of material around the mandrel such that a portion of the inner strip is visible between the turns of the outer strip.

[0016] Such a method has the advantage that it can be implemented on standard spiral tube winding machinery. In such machinery, the desired numbers of strips are continuously wound around a mandrel in close succession, and the formed tube drawn off continuously from the mandrel and cut into appropriate lengths.

[0017] Preferably the second strip is fed onto the mandrel such that it covers the joint between consecutive turns of the first strip, and adhesive is coated onto the second strip prior to its application to the first strip.

[0018] A preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 shows a container in accordance with the invention;

Figure 2 shows a detail of the construction of Figure 1; and

Figure 3 illustrates schematically the method of manufacture of the container of Figures 1 and 2.

[0019] With reference to Figures 1 and 2, a two-ply tubular container 1 comprises a tubular body 2 which comprises an inner sleeve 4, an outer strip 6 spirally wound about, and bonded to, the sleeve 4, a top closure e.g. a cap 8 and a bottom closure e.g. a cap 10. The container 1 is shown as containing a bottle 12, for example a bottle of spirits.

[0020] The inner sleeve 4 is made from a transparent PET (Polyethylene Terephthalate) and is formed by spirally winding, as will be described further below. The outer strip 6 is made from a board material, for example paperboard or cardboard. The inner sleeve 4 is exposed between the turns of the outer strip 6, which means that

the bottle 12 is visible through a spiral window 14 defined between the turns of the outer strip 6.

[0021] As can be seen from Figure 2, the inner sleeve 4 is formed from a strip 16 of PET which is wound about a mandrel 18 (Figure 3). Adjacent turns 20, 22 of the PET strip overlap in a joint region 24.

[0022] In order to disguise the joint between the turns 20, 22 the outer strip 6 is wound around the sleeve 4 so as to cover the joint region 24, as shown in Figure 2. A layer of adhesive 26, such as a hot melt adhesive, is applied between the outer strip 6 and the inner strip turns 20, 22, to bond the strips 6, 16 together.

[0023] Clearly the outer strip 6 needs to be wound with the same pitch as the PET strip 16, but by choosing strips 6, 16 of appropriate widths, the width of the window 14 can be varied. Furthermore, the shape of the window 14 can be varied by varying the edge profile of the outer strip 6. Typically the PET strip may be about 130 mm wide and the outer strip 75- 100 mm wide.

[0024] With reference to Figure 3, there is shown schematically the manufacture of the container of Figures 1 and 2.

[0025] The tubular body 2 is made on a conventional spiral winding tube making machine which comprises a mandrel 18. The PET strip 16 is fed onto the mandrel 18 from a reel (not shown). The outer strip 6, which has been pre-printed, if required, is then fed onto the mandrel 18, over the PET strip 16, from a second reel (not shown) such that it covers the joint region 24 between adjacent turns 20, 22 of the PET strip 16. The inner surface 28 of the outer strip 6 is coated with a hot melt, or other, adhesive by a suitable applicator, not shown, such that it will bond together the whole structure. The mandrel 18 is stationary and the strips 6, 16 are pulled onto the mandrel in a conventional manner by a Figure-8 belt which wraps around the mandrel 18.

[0026] Again, as is conventional, the belt is angled to the axis of the mandrel so that it pulls the formed tube off the mandrel 18 continuously, whereafter it is cut to the appropriate length. The cut tubes can then have further operations, such as the application of end caps, performed upon them.

[0027] It will be appreciated that various modifications may be made to the above described embodiment without departing from the scope of the invention. For example, the inner sleeve 4 need not be of plastics and could be made from a board material. Also, it could be a two or more ply construction, not just a single ply as disclosed. Also, the inner sleeve 4 could be produced in some other way, for example extrusion. It could also be coloured, patterned, embossed or otherwise decorated, for example with holographic images.

[0028] In addition, although just a single outer strip 6 has been shown, it would be possible, for example to wind one or more further strips around the inner sleeve. For example, a much thinner strip could be positioned between the turns of the main strip 6. Also, the outer strip 6 may be of another material, e.g metal and plastic

foils and may be patterned, embossed, decorated, for example with holographic images, and so on.

[0029] The inner strip 16 has been shown to have its adjacent turns 20, 22 overlapping. This is preferred as it makes it more difficult for adhesive to exude into the interior of the tube, which may not be desirable, particularly when packaging foodstuffs. However, this is not essential and the edges of the adjacent turns 20, 22 may merely abut or indeed be spaced from one another. The latter arrangement has the potential advantage that less material is used. In order to prevent adhesive exuding into the tube, it need not be applied over the complete surface of the outer strip 6, but may be applied to selected areas only.

[0030] Also, while the tubes described herein have application as bodies for tubular containers, they may find other applications as well.

Claims

1. A tube or tubular container comprising an inner tubular sleeve and an outer strip of material spirally wound around the sleeve such that the inner sleeve is exposed between the turns of the strip, the inner sleeve being wholly, or in part, transparent or translucent whereby the inside of the tube or container can be viewed between the turns of the outer strip.
2. A tube or tubular container comprising an inner tubular sleeve and an outer strip of material spirally wound around the sleeve such that the inner sleeve is exposed between the turns of the strip.
3. A tube or container as claimed in claim 1 or 2 wherein the inner sleeve comprises at least one spirally wound, inner, strip.
4. A tube or tubular container comprising at least two spirally wound, inner and outer, strips, a portion of the inner strip being visible between the turns of the outer strip.
5. A tube or container as claimed in claim 3 or 4 wherein the width of the inner strip and the winding pitch are such that, when wound, the edges of the strip abut or overlap so as to provide a substantially continuous inner sleeve.
6. A tube or container as claimed in any of claims 3 to 5 wherein the turns of the inner strip are joined together, for example bonded together, by the outer strip.
7. A tube or container as claimed in any of claims 3 to 6 wherein the outer strip is positioned such that it covers the joint between the turns of inner strip.

8. A tube or container as claimed in any of claims 3 to 7 wherein the outer strip is narrower than the inner strip.
9. A tube or container as claimed in any preceding claim wherein the materials or properties of the inner sleeve or strip and the outer strip are different. 5
10. A tube or container as claimed in any preceding claim wherein the inner sleeve or sleeve is of a plastics material. 10
11. A tube or container as claimed in claim 10 wherein the material is a polyester, acetate or polypropylene. 15
12. A tube or container as claimed in claim 11 wherein the material is PET.
13. A tube or container as claimed in any preceding claim wherein the inner sleeve or strip is transparent or translucent. 20
14. A tube or container as claimed in any preceding claim wherein the outer strip is of a board material. 25
15. A method of manufacturing a tube or a tubular container comprising winding at least one inner strip of material around a mandrel and then winding a second, outer, strip of material around the mandrel such that a portion of the inner strip is visible between the turns of the outer strip. 30
16. A method as claimed in claim 15 wherein the strips are continuously wound around a mandrel in close succession and formed tube drawn off continuously from the mandrel. 35
17. A method as claimed in claim 15 or 16 wherein the second strip is fed onto the mandrel such that it covers the joint between consecutive turns of the first strip. 40
18. A method as claimed in claim 17 wherein adhesive is coated onto the second strip prior to its application to the first strip. 45

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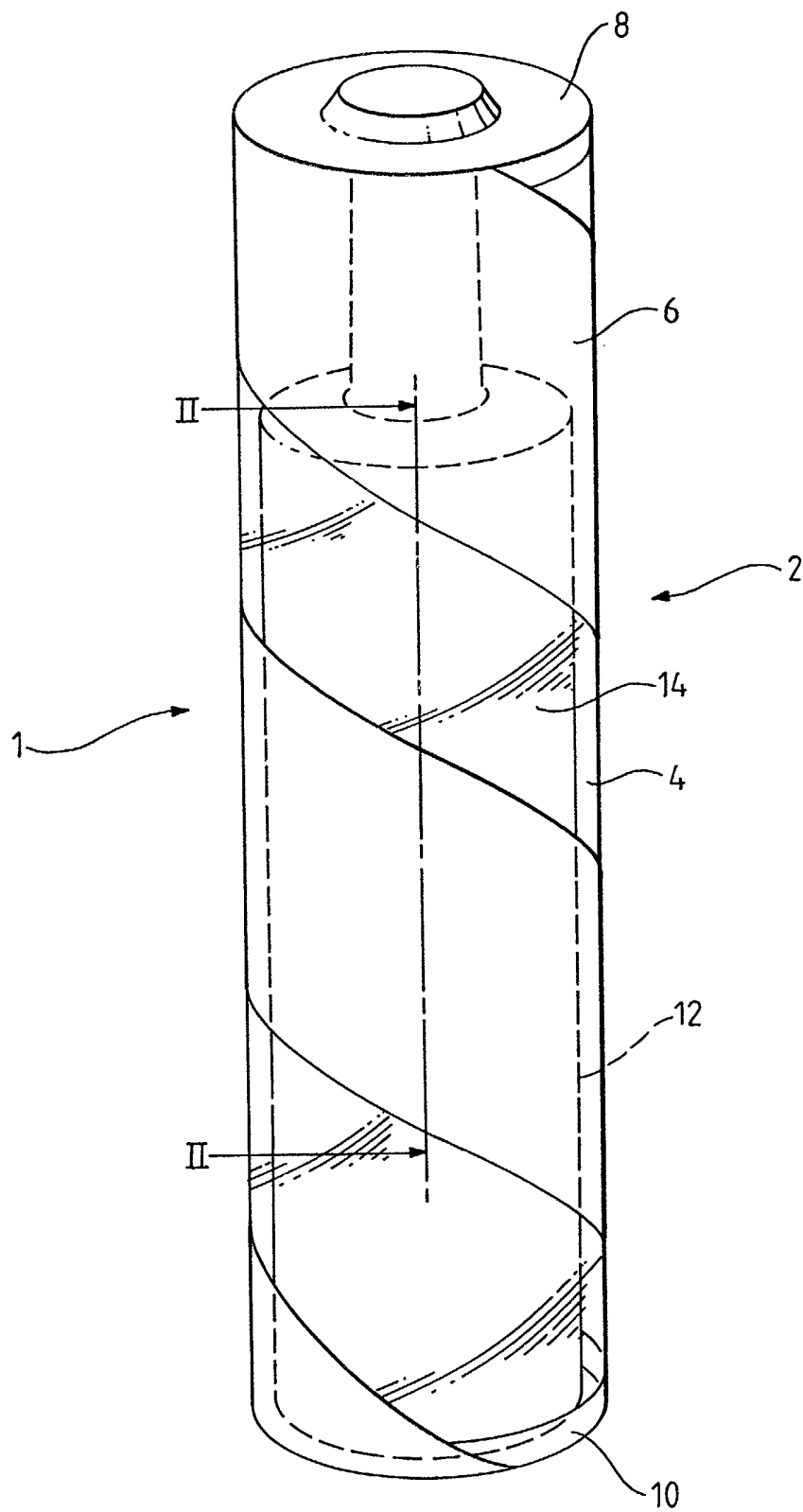


FIG. 1

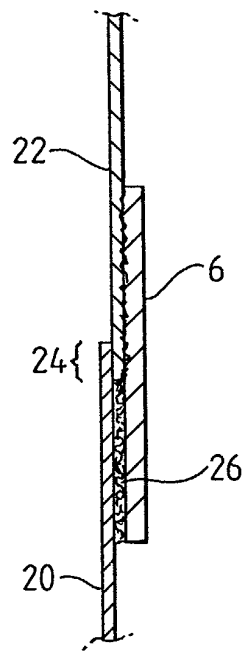


FIG. 2

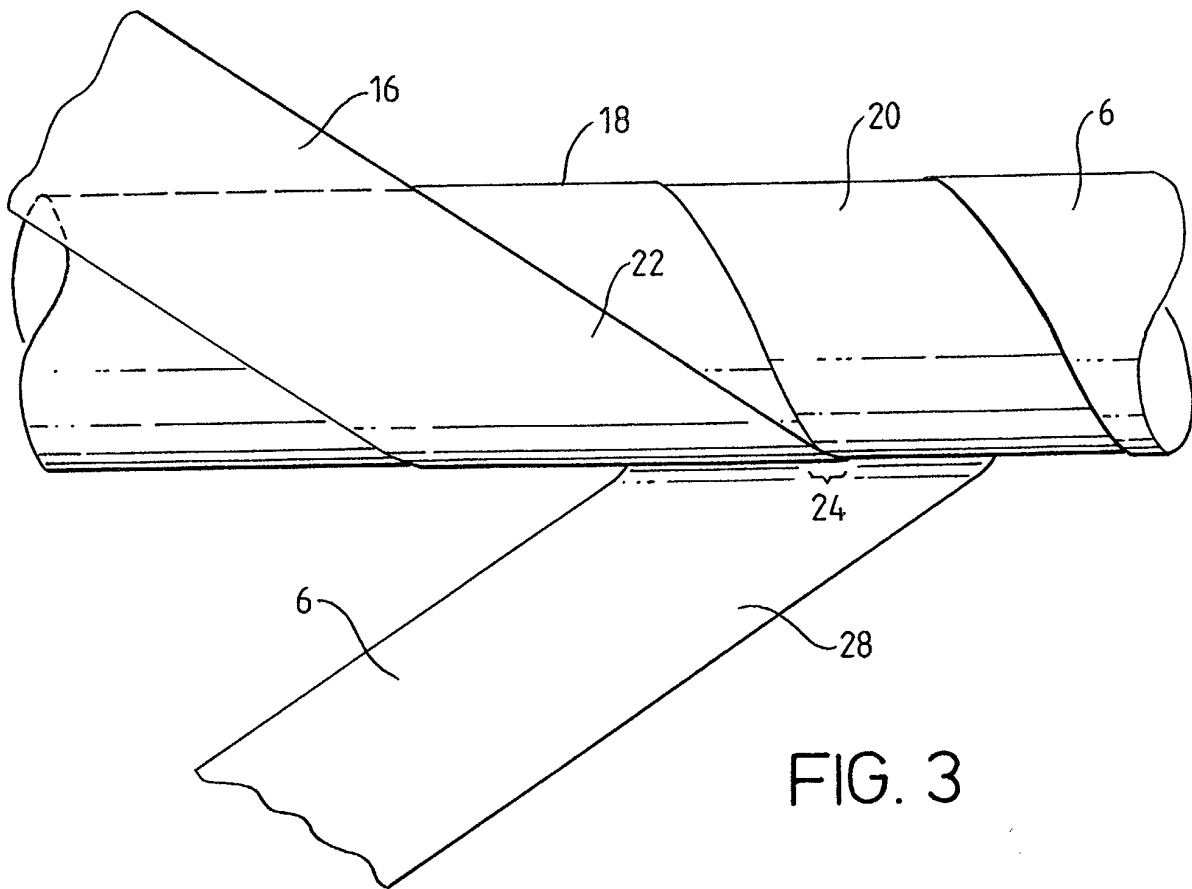


FIG. 3