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(54) **CONTAINERS FOR SAFE STORAGE OF
USED CIGARETTES, CIGARS, AND JOINTS**

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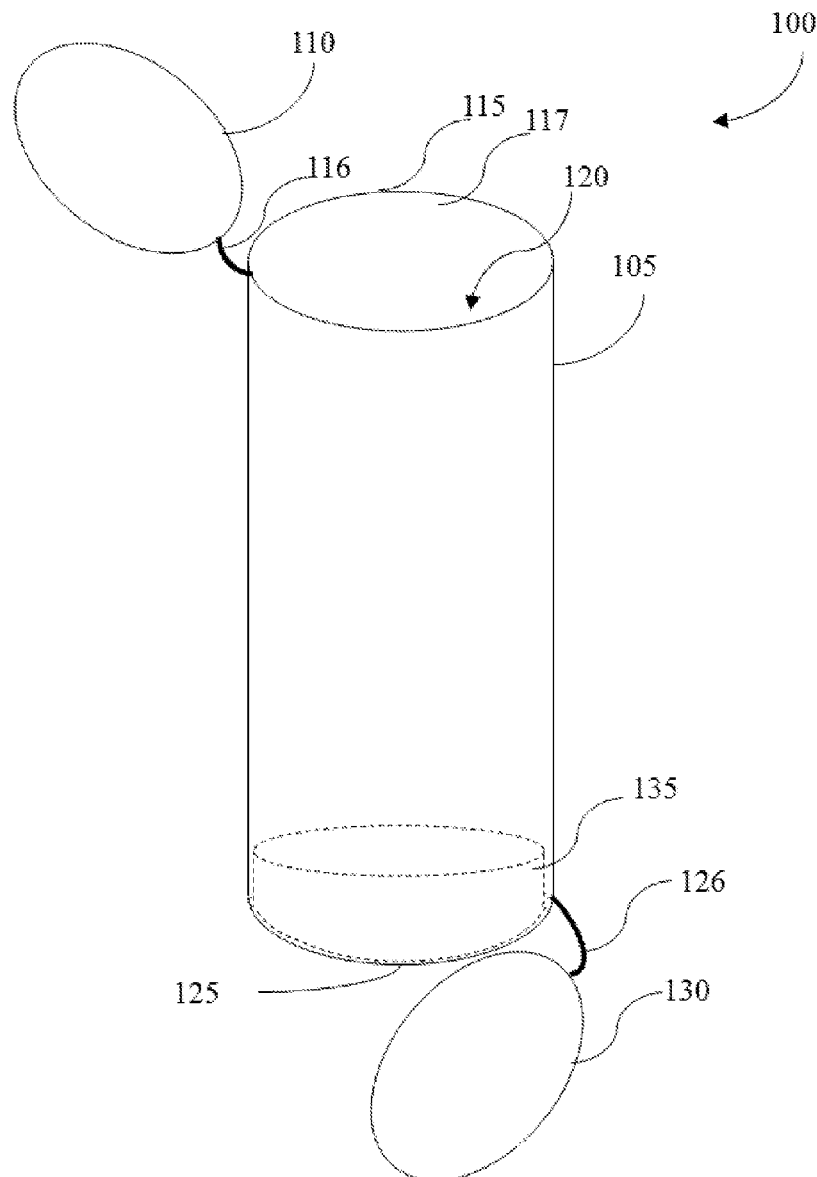
(57) **ABSTRACT**

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Related U.S. Application Data

(60) Provisional application No. 62/415,249, filed on Oct.
31, 2016.

A container for storing a used cigarette includes an insert comprising a high thermal-conductive material, sized and dimensioned to be placed at the inside bottom of the container. The insert preferably includes one or more surface features that assist in extinguishing the burning end of the cigarette.



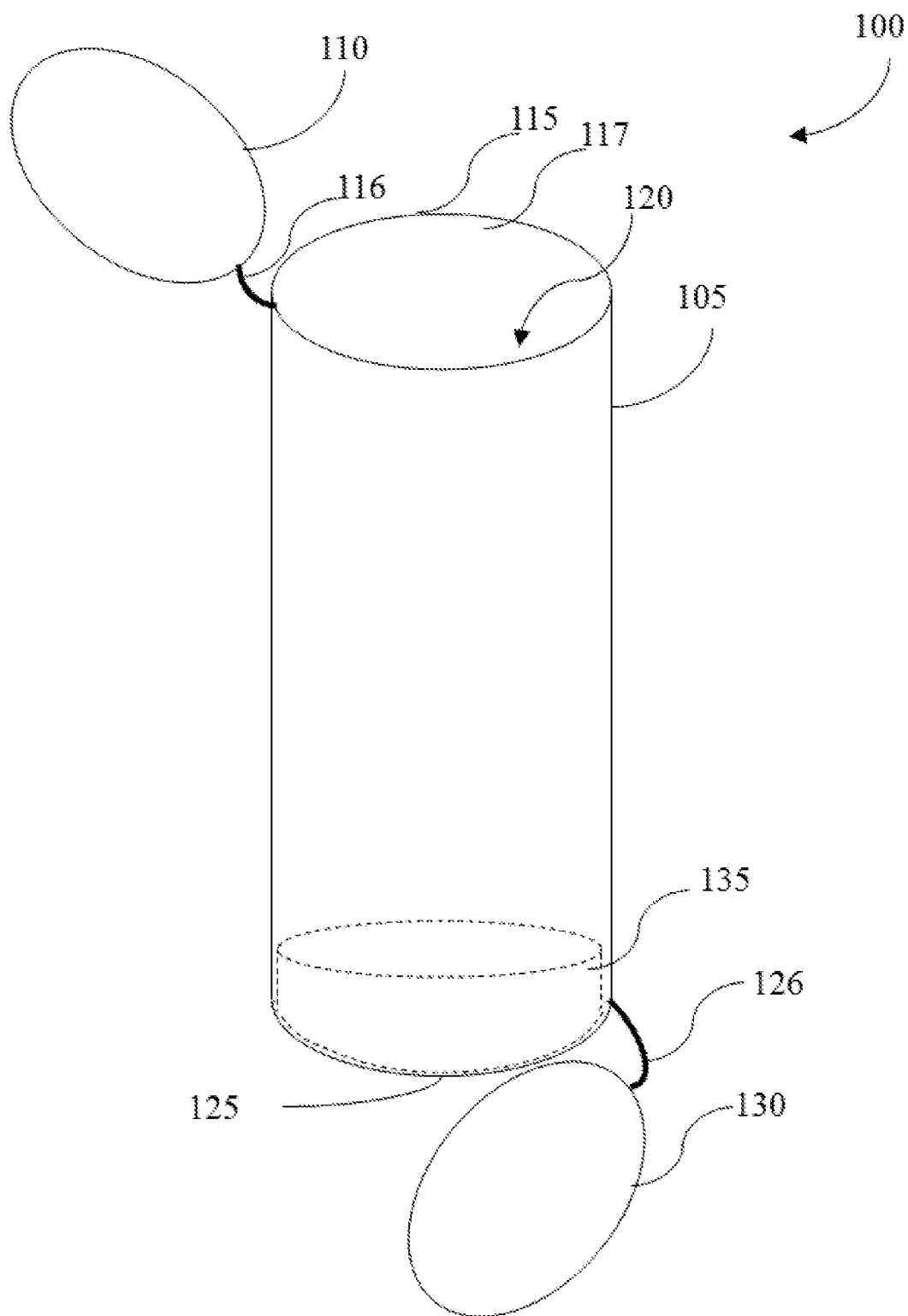


Figure 1

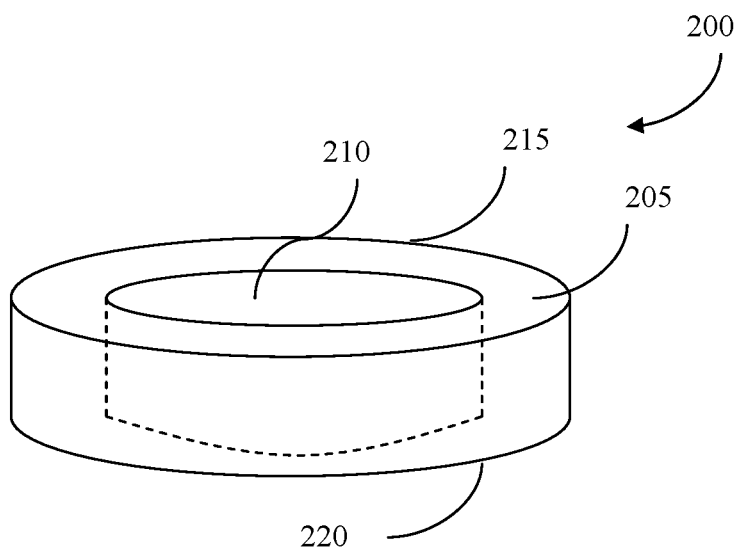


Figure 2

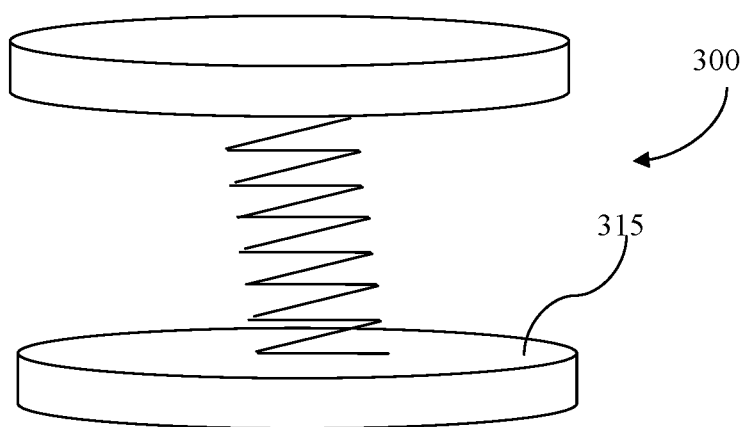


Figure 3

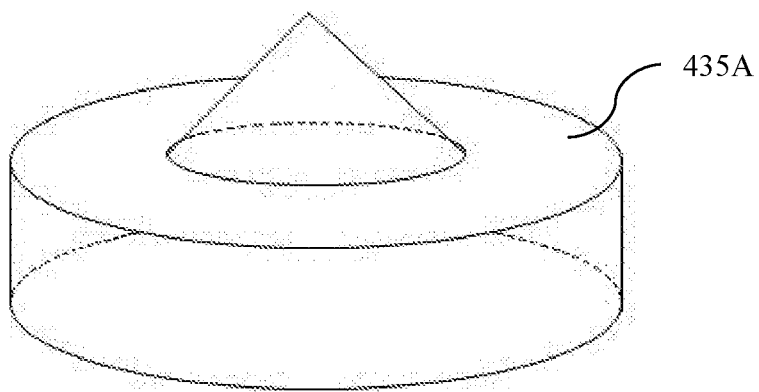


Figure 4A

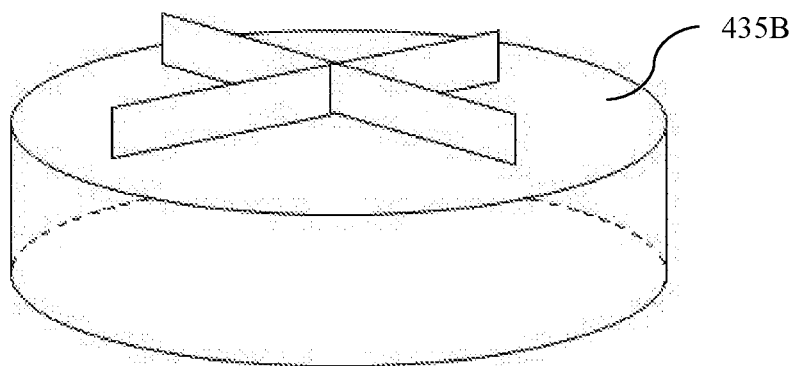


Figure 4B

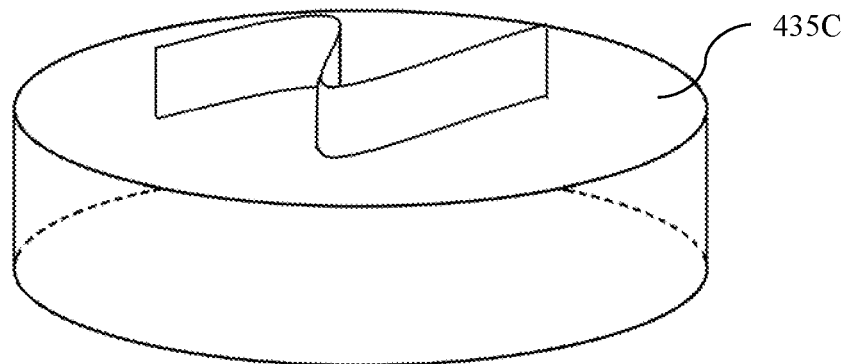


Figure 4C

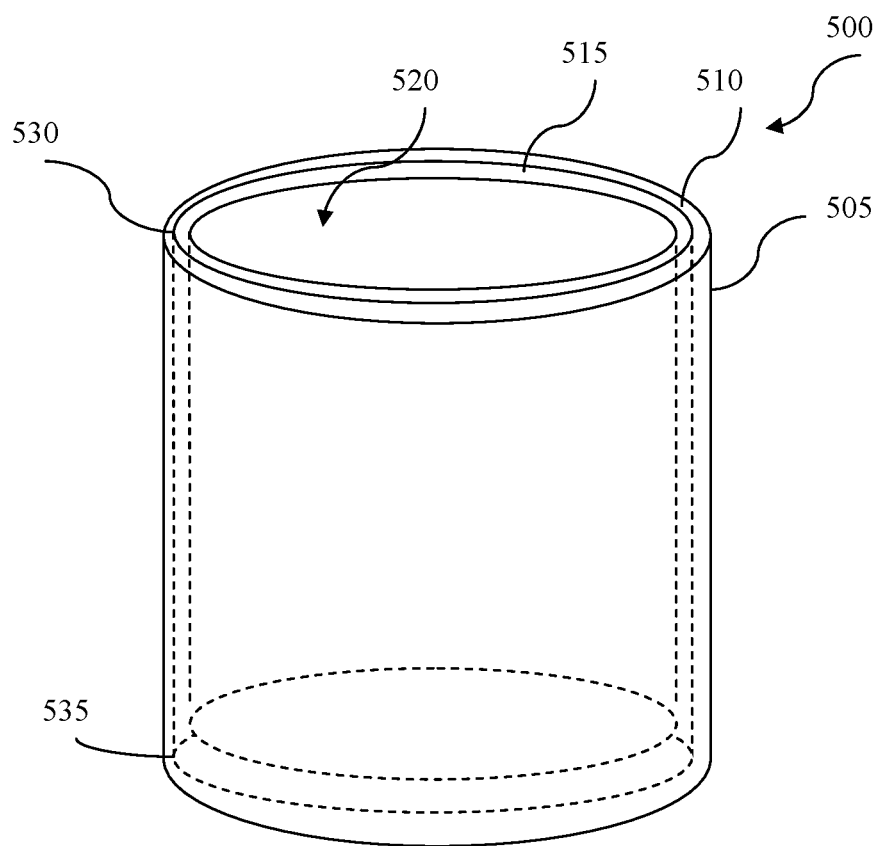


Figure 5

CONTAINERS FOR SAFE STORAGE OF USED CIGARETTES, CIGARS, AND JOINTS

PRIORITY

[0001] This application claims priority to U.S. provisional patent application No. 62/415,249, filed Oct. 31, 2016.

FIELD OF THE INVENTION

[0002] The field of the invention is containers for safe storage of used (e.g., partially smoked) cigars, cigarettes, or marijuana joints.

BACKGROUND

[0003] Many states have legalized marijuana for medical uses, and growing number of states are legalizing marijuana for recreational uses as well. While it is expected that the number of recreational marijuana users increases, pricing for recreational marijuana is expected to remain high. It is becoming common for users to not smoke an entire joint in one sitting due to the cost per joint and the potency of the marijuana sold. Thus, such users attempt to save the remainder of the joint by inserting the used joint back into its container, often while still lit and before the lit end has cooled. Unfortunately, this results in a portion of the container's inner wall to melt and chemicals to permeate into the used joint, which might then be inhaled the next time the joint is lit and used.

[0004] Some efforts have been put forth to solve similar problems with storage of used cigars, by providing a container made of high thermal conductive materials. For example, U.S. Pat. Pub. No. 2009/0050167 to Woods provides a cigar or cigarette container having a bottom portion made of a material having high heat conductivity. However, forming the container with a high heat conductivity material can both dramatically increase the cost of the container, and preclude user-replacement of the material.

[0005] The priority 62/415,249 provisional application, and the Woods application, are each incorporated herein by reference in their entirety. Where a definition or use of a term in a reference that is incorporated by reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein is deemed to be controlling.

[0006] As commonly used, the term cigarette refers to a tobacco cigarette. However, as used hereinafter, the term "cigarette" means any elongated apparatus having a mouth end and a burnable end, and used to smoke tobacco, marijuana or other substance. Under this definition, both marijuana joints and cigars are both considered to be cigarettes. On the other hand, a typical incense stick is not considered to be a cigarette because it has no mouth end.

[0007] Thus, there is still a need for improved device for safe storage of used cigarettes.

SUMMARY OF THE INVENTION

[0008] The inventive subject matter provides apparatus and methods for containers for storing used cigarettes. Preferred containers include an elongated body defining a lumen, a first end defining an opening, and a second end.

[0009] Preferred containers also advantageously include an insert that is sized and dimensioned to be placed inside the lumen, wherein the insert comprises a high thermal-conductive material. It is especially preferred that the insert

comprises a core portion comprising high thermal-conductive material, and a surrounding portion comprising a low thermal-conductive material. In this manner, the insert comprising the core portion comprising high-thermal conductive material extinguishes used cigars, cigarettes, or marijuana joints, and the surrounding portion comprising a low thermal-conductive material reduces exposure of the container to heat damage from the heat emanated by the burnable end used cigarettes.

[0010] As used herein, the term "high thermal-conductive material" means any material that has a thermal conductivity of more than 50 Watts per meter-K°. Preferred high thermal-conductive materials have thermal conductivity of more than 100 Watts per meter-K°, and more preferred high thermal-conductive materials have thermal conductivity of more than 200 Watts per meter-K°, all measured at STP one atmosphere, 20° C. Thus, high thermal-conductive materials include metals (e.g., aluminum, copper, etc.), thermally conductive gels, and thermally conductive greases, and carbon nanotubes.

[0011] As used herein, the term "low thermal-conductive material" means any material that has thermal conductivities of less than 50 Watts per meter-K°. Preferred low thermal-conductive materials have thermal conductivity of less than 10 Watts per meter-K°, and more preferred low thermal-conductive materials have thermal conductivity of more than 1 Watts per meter-K°, all measured at STP one atmosphere, 20° C. Thus, low thermal conductivity materials include acrylic glass, polyurethane foam, silica aerogel, wood, natural fiber, rubber, and cork.

[0012] Unless the context dictates the contrary, all ranges set forth herein should be interpreted as being inclusive of their endpoints, and open-ended ranges should be interpreted to include commercially practical values. Similarly, all lists of values should be considered as inclusive of intermediate values unless the context indicates the contrary.

[0013] Various objects, features, aspects and advantages of the inventive subject matter will become more apparent from the following detailed description of preferred embodiments, along with the accompanying drawing figures in which like numerals represent like components.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a perspective view of one embodiment of the container, having an insert with a rounded bottom.

[0015] FIG. 2 is a perspective view of one embodiment of a cupped insert with a flat bottom.

[0016] FIG. 3 is a perspective view of another embodiment of an insert with top and bottom portions coupled by a spring.

[0017] FIG. 4A is a perspective view of an alternative an insert with a bump or finger to facilitate extinguishment of a burning end of the cigarette.

[0018] FIG. 4B is a perspective view of an alternative insert having two orthogonally intersecting raised surface features.

[0019] FIG. 4C is a perspective view of an alternative insert having a raised and curved surface feature.

[0020] FIG. 5 is a perspective view of another embodiment of a tall insert

DETAILED DESCRIPTION

[0021] The following discussion provides many example embodiments of the inventive subject matter. Although each embodiment represents a single combination of inventive elements, the inventive subject matter is considered to include all possible combinations of the disclosed elements. Thus if one embodiment comprises elements A, B, and C, and a second embodiment comprises elements B and D, then the inventive subject matter is also considered to include other remaining combinations of A, B, C, or D, even if not explicitly disclosed.

[0022] In some embodiments, the numbers expressing quantities of properties such as dimensions used to describe and claim certain embodiments of the invention are to be understood as being modified in some instances by the term “about.” Accordingly, in some embodiments, the numerical parameters set forth in the written description and attached claims are approximations that can vary depending upon the desired properties sought to be obtained by a particular embodiment. In some embodiments, the numerical parameters should be construed in light of the number of reported significant digits and by applying ordinary rounding techniques. Notwithstanding that the numerical ranges and parameters setting forth the broad scope of some embodiments of the invention are approximations, the numerical values set forth in the specific examples are reported as precisely as practicable. The numerical values presented in some embodiments of the invention can contain certain errors necessarily resulting from the standard deviation found in their respective testing measurements.

[0023] Unless the context dictates the contrary, all ranges set forth herein should be interpreted as being inclusive of their endpoints and open-ended ranges should be interpreted to include only commercially practical values. Similarly, all lists of values should be considered as inclusive of intermediate values unless the context indicates the contrary.

[0024] As used in the description herein and throughout the claims that follow, the meaning of “a,” “an,” and “the” includes plural reference unless the context clearly dictates otherwise. Also, as used in the description herein, the meaning of “in” includes “in” and “on” unless the context clearly dictates otherwise.

[0025] The recitation of ranges of values herein is merely intended to serve as a shorthand method of referring individually to each separate value falling within the range. Unless otherwise indicated herein, each individual value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g., “such as”) provided with respect to certain embodiments herein is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the invention.

[0026] Groupings of alternative elements or embodiments of the invention disclosed herein are not to be construed as limitations. Each group member can be referred to and claimed individually or in any combination with other members of the group or other elements found herein. One or more members of a group can be included in, or deleted from, a group for reasons of convenience and/or patentabil-

ity. When any such inclusion or deletion occurs, the specification is herein deemed to contain the group as modified thus fulfilling the written description of all Markush groups used in the appended claims.

[0027] As used herein, and unless the context dictates otherwise, the term “coupled to” is intended to include both direct coupling (in which two elements that are coupled to each other contact each other) and indirect coupling (in which at least one additional element is located between the two elements). Therefore, the terms “coupled to” and “coupled with” are used synonymously.

[0028] The inventive subject matter provides apparatus and methods in which a container for storing used cigarettes has a replaceable insert.

[0029] In FIG. 1 container **100** generally includes an elongated body **105** with a top end **115** and a bottom end **125**, and a replaceable insert **135** positioned at or near the bottom end. In this particular embodiment, there is a top lid **110** and a bottom lid **130**. The elongated body **105** is sized and dimensioned to store at least one conventionally sized cigar, cigarette, or marijuana joint. The elongated body **105** is preferably at least 2 inches long, more preferably at least 3 inches long, and still more preferably at least 4 inches long.

[0030] The elongated body **105** defines a lumen **120**. As used herein, a “lumen” is the interior space within a structure. In some embodiments, the shape of the lumen **120** depends on the shape of the elongated body **105**. For example, the elongated body **105** can be in a tubular shape, a twisted tubular shape, a cuboid shape, and/or a triangular prism shape, and the shape of the lumen **120** can be shaped to match the elongated body **105**. In other embodiments, the shape of the lumen **120** can be independent from the shape of the elongated body **105**. For example, where the elongated body **105** has a tubular shape, the lumen **120** could have a cuboid shape, or vice versa.

[0031] Elongated body **105** can comprise any suitable type of materials or structures. Low thermal conductive materials are preferred, provided they are lightweight, inexpensive to manufacture, and when utilized in a thin-walled structure (preferably less than 2 mm thick), are sufficiently sturdy to be carried in a pocket or purse without significant reduction in the lumen, such as by denting, crushing or bending. Contemplated such materials for the elongated body **105** include one or more rigid plastics (e.g., polypropylene, polyethylene, nylon, polyvinyl chloride (PVC), polytetrafluoroethylene (PTFE), etc.), and fibers (e.g., synthetic fiber, glass fiber, etc.), all of which are relatively stiff and inexpensive.

[0032] Elongated body **105** could also include a metal (e.g., aluminum, copper, platinum, metal alloys, etc.) or other high thermal conductive material(s), however, use of such materials in the elongated body are thought to be disadvantageous because they would tend to conduct heat from the burning or recently burning end of the cigarette to the hand of the person holding the container **100**. If such high thermal conductive material(s) are used in the elongated body **105**, it is desirable for the metal to have an outer layer of low thermal conductive material(s).

[0033] In some embodiments, the elongated body **105** comprises one or more biodegradable materials so that the container **100** can be disposable in an eco-friendly manner. As used herein, “biodegradable” means a material or collection of materials that will break down to at least 90%

H₂O, CO₂ and biomass within a period of six months from the action of naturally occurring micro-organisms (e.g., bacteria, fungi, algae, etc.) under favorable conditions. For example, meat, plants, wood, cotton, animal protein, paper, are all deemed herein to be biodegradable. Thus, while individual components of an object might not be deemed biodegradable, the object itself will be deemed biodegradable if the components are biodegradable overall.

[0034] Elongated body 105 can be manufactured in any suitable manner, but preferably by injection molding, because of low cost and rapid production.

[0035] The container 100 includes at least one opening 117 at the top end 115. The opening 117 is sized and dimensioned to receive at least one conventionally sized cigarette. For example, the area of the opening 117 can be at least 3 cm², square inch, preferably at least 4 cm², and more preferably at least 6 cm².

[0036] The inside bottom of containers preferably matches the bottom of inserts used in those containers. Thus, where the inside bottom of a container is flat, preferred inserts also have a flat bottom. Where the inside bottom of a container is concave, as in FIG. 1, preferred inserts 135 have a mating convex bottom. The inside bottom of containers could alternatively be bumpy, or have some other shape, but such shapes are not preferred.

[0037] Insert 135 can be deployed inside the lumen 120 in any suitable manner. Where the container 100, has only a single (top) opening, insert 135 can be deployed by simply dropping or pushing the insert 135 into the lumen 120 after the container 100 is formed. Insert 135 can have an adhesive on a bottom side, so that when the insert 135 is dropped into, or pushed to, the bottom of the container, the insert 135 will stick on the bottom. Where the container 100 has a bottom lid 130, as in FIG. 1, the bottom lid 130 can be opened, and the insert can be manually adhered directly to the top surface of the bottom lid 130. Containers having bottom lids are advantageous in that inserts can be readily replaced by opening the bottom lid, and replacing the insert.

[0038] Insert 135 should be sized and dimensioned to be placed at the bottom end 125 of the container 100, although inserts are contemplated that are cup shaped, or otherwise sufficiently oversized relative to the dimensions of the bottom of the container such that sides of the insert extend upwards a mm or more from the bottom. Thus, contemplated inserts need not be deployed completely flat along the bottom of the container.

[0039] The insert 135 preferably employs a low thermal conductive material of sufficient thickness to prevent excessive heat from contacting or otherwise interacting with the wall of the container 100, thereby preventing exposure of the container's inner surface to excessive heat, which could otherwise damage the container 100. In addition, the insert 135 can act as a heat sink, by reducing the temperature of the burning portion of the cigarette when an unfinished cigarette touches the insert 135.

[0040] Container 100 can further include a top lid 110 that can be coupled with the top end 115 of the container 100, and a bottom lid 130 that can be coupled with the bottom end 125 of the container 100. In some embodiments, the top lid 110 and the bottom lid 130 are connected to the top end 115 or the bottom end 125 via a connector 116 and connector 126, respectively.

[0041] In some embodiments, the insert 135 is configured to engage with the bottom lid 125 such that the insert 135

cannot be flipped or unstably placed inside the lumen 120 of the container 100. Any suitable engagement mechanisms can be used. For example, the insert 135 and the bottom lid 125 can be engaged via a female member on the insert 135 and the male member on the bottom lid 125. In another example, the insert 135 and the bottom lid 125 comprise magnetic materials such that the insert 135 can magnetically attach to the bottom lid 130 when the insert 135 is dropped into the lumen 120.

[0042] While one embodiment of the insert 135 can comprise only high thermal-conductive materials, it is also contemplated that, in some embodiments, an insert 135 can comprise layers of a high thermal-conductive material and a low thermal-conductive material. FIG. 2 shows an example of such embodiments. In these embodiments, the insert 200 includes a top surface 215, which faces the top end 115 of the container, and a bottom surface 220, which faces the bottom end 125 of the container when the insert is placed in the container.

[0043] Insert 200 is cup shaped, having a core compartment 210 and a raised rim 205. Preferably, the core compartment 210 comprises materials with higher thermal conductivity than the materials of the rim 205. For example, the core compartment 210 of the insert 200 comprises high thermal-conductive materials (e.g., metals, thermal-conductive gels, thermal-conductive grease, etc.), the rim 205 comprises low thermal-conductive materials. The rim 205 comprising low heat-conductive materials can reduce heat transmission from the core compartment 210 to the elongated body 105 and/or the bottom end 125 (or the bottom lid 130) of the container 100 so that structural integrity of the elongated body 105 and/or bottom end 125 (or the bottom lid) is not significantly structurally compromised by the high temperature of the burning portion of the used cigarette.

[0044] In a preferred embodiment, the core compartment 210 comprises at least 50%, preferably at least 70%, and more preferably at least 80% of the surface area of the top surface 215 to provide sufficient space to contact the burning portion of the used cigarette when the used cigarette is received by the container 100 through the top end 115. In this embodiment, the core compartment 210 can comprise the same surface area of the bottom surface 215 as the top surface. However, it is also contemplated that the core compartment 210 can comprise less surface area (e.g., less than 70%, less than 50%, and less than 30% of the surface area of the bottom surface 220, etc.). In some embodiments, the core compartment 210 is not exposed at all on the bottom surface 220 of the insert so that the bottom lid or the bottom end 125 of the container can be protected from the heat dispersed to the core compartment 210 from the burning portion of the cigarette.

[0045] In yet another embodiment, insert 135 can have a spring-like portion or coil formed from a conductive material, which can radiate heat without exposing the container 100 to excessive heat. In such embodiments, exemplified in FIG. 3, the spring-like portion or coil can be bounded by top and bottom plates, with the top plate comprising a high thermal-conductive material the bottom plate comprising a low thermal-conductive material. Heat from the burning portion of the used cigarette would thereby be transferred to the spring-like portion or coil for dissipation.

[0046] Alternative inserts can include a top surface feature configured to separate out portions of the burning end of the cigarette, in a manner that tends to facilitate extinction of the

burn. For example, in FIG. 4A, insert **435A** has a short finger or bump that would extend into a burning end of a cigarette when the cigarette is pushed down into a container (as for example container **100**). FIG. 4B depicts an alternative insert **435B** that, instead of the finger or bump, comprises a structure of two orthogonally intersecting raised surface features, which vary in height from a maximum in the center to lesser heights at the ends of the features. FIG. 4C depicts yet another alternative insert **435C**, having a raised “S” or other curved surface feature. These and other contemplated surface features preferably have a maximum height of 2-3 mm.

[0047] Whatever type of insert is used, it is considered advantageous for the insert to comprise one or more high thermal-conductive materials. Such materials are intended to disperse the heat from the burning end of the cigarette, and thereby also facilitate extinction of the burn.

[0048] FIG. 5 illustrates an embodiment of the insert **500**. In this embodiment, the insert **500** is a canister-type insert, which has an open upper end **530**, a closed lower end **535**, and a side wall **505** defining a lumen **520** with the closed lower end **535**. The side wall **505** and the lower end **535** include an inner layer **515** and an outer layer **510**. In a preferred embodiment, the inner layer **515** comprises high heat-conductive materials and the outer layer **510** comprises low heat-conductive materials. This embodiment of the insert **500** can protect sidewalls of the container from being directly contacted by the burning portion of a cigarette, thus insert **500** can protect a large container configured to contain multiple used cigarettes.

[0049] It should be apparent to those skilled in the art that many more modifications besides those already described are possible without departing from the inventive concepts herein. The inventive subject matter, therefore, is not to be restricted except in the spirit of the appended claims. Moreover, in interpreting both the specification and the claims, all terms should be interpreted in the broadest possible manner consistent with the context. In particular, the terms “comprises” and “comprising” should be interpreted as referring to elements, components, or steps in a non-exclusive manner, indicating that the referenced elements, components, or

steps can be present, or utilized, or combined with other elements, components, or steps that are not expressly referenced. Where the specification claims refers to at least one of something selected from the group consisting of A, B, C and N, the text should be interpreted as requiring only one element from the group, not A plus N, or B plus N, etc.

What is claimed is:

1. A container for storing a used cigarette, comprising:
an elongated body that defines a lumen having a bottom;
and
an insert comprising a high thermal-conductive material,
the insert sized and dimensioned to be positioned at the bottom of the lumen.
2. The container of claim 1, wherein the elongated body comprises a plastic material.
3. The container of claim 1, wherein the body has an open end, and a lid configured to close the open end.
4. The container of claim 3, wherein the body has a closable end, and a lid configured to mate with the closable end.
5. The container of claim 1, wherein the body has an open end, sized and dimensioned to receive each of the used cigarette, and the insert.
6. The container of claim 1, wherein the insert comprises a core portion and a surrounding portion, wherein the core portion comprises the high thermal-conductive material, and the surrounding portion comprises a low thermal-conductive material.
7. The container of claim 6, wherein the low thermal-conductive material is selected from the group consisting of: wood, cork, an acrylic glass, a natural fiber, a rubber, a polyurethane, and a silica aerogel.
8. The container of claim 1, wherein the insert comprises a raised top surface feature.
9. The container of claim 1, wherein the insert comprises a spring.
10. The container of claim 1, wherein the insert has an adhesive bottom.
11. The container of claim 1, wherein the high thermal-conductive material comprises a metal.

* * * * *