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(71) Applicant: **CABINET HEALTH P.B.C** [US/US]; 30 Florida Avenue NW, Unit 6, Washington, District of Columbia 20001 (US).

(72) Inventors: **GONG, Russell Eliot**; c/o Cabinet Health P.B.C., 30 Florida Avenue NW, Unit 6, Washington, District of Columbia 20001 (US). **PATEL, Achal Apurva**; c/o Cabinet Health P.B.C., 30 Florida Avenue NW, Unit 6, Washington, District of Columbia 20001 (US).

(74) Agent: **CHOI, Anita** et al.; Morrison & Foerster LLP, 425 Market Street, San Francisco, California 94105 (US).

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(54) Title: CAP ASSEMBLY FOR REUSABLE MEDICINE CONTAINER, AND USES THEREOF

(57) Abstract: Provided herein are container systems for the storage of refillable pharmaceutical products. The container systems include a cap assembly configured to hold a magnetic token in place on the exterior surface. The cap assembly and container systems include design features for child resistance, ease of storage, and ease of refilling or dispensing contents in the systems. Also provided are refillable pharmaceutical products storage kits that include the container system and a refill pouch.

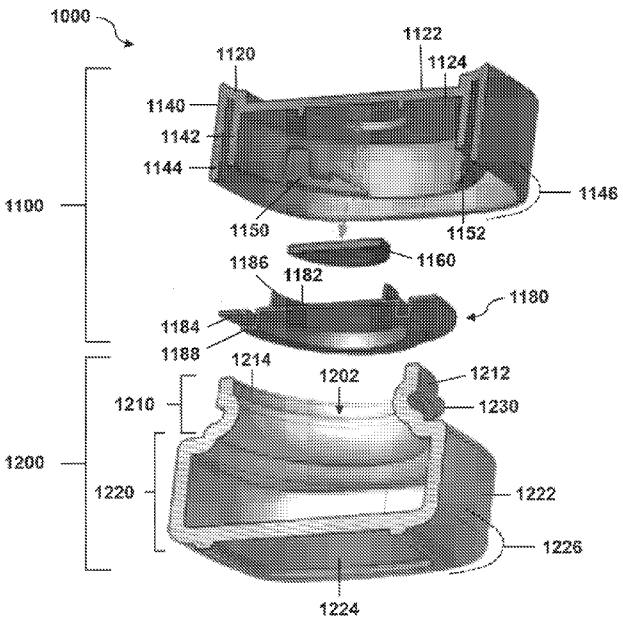

FIG. 1

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CAP ASSEMBLY FOR REUSABLE MEDICINE CONTAINER, AND USES THEREOF

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 63/187,826, filed May 12, 2021, which is incorporated herein by reference in its entirety.

FIELD

[0002] The present disclosure relates generally to packaging materials, and more specifically to a cap assembly for a container for storing refillable pharmaceutical products (*e.g.*, medicine pills, tablets, etc.).

BACKGROUND

[0003] Currently, distribution of over-the-counter medicines typically generates large amounts of waste due to the high incidence of single use and short-term usage packaging materials. For example, packaging materials for medicine containers and pill packs are typically made from plastics, cardboards and foils, which are generally discarded once their contents have been consumed. Therefore, short-term usage products in pharmaceutical packaging presents large-scale waste management considerations. Container systems that typically house over-the-counter medicines can also vary widely in physical dimensions, such as size and shape. Such variability means that traditional pharmaceutical packaging systems may also present a challenge in the organization and storage of household pharmaceutical supplies.

[0004] What is therefore desirable in this art is to provide reusable medicine packaging with specific design features that facilitate organization and storage of pharmaceutical products, as well as tracking of information relating to the refillable pharmaceutical products contained in reusable containers.

BRIEF SUMMARY

[0005] In some aspects, provided is a cap assembly, comprising: a top, wherein the top has an exterior surface and an interior surface, wherein the exterior surface of the top is configured to receive a magnetic token; a side connected to and extending from the top; a gasket connected to the interior surface of the top; and a magnet positioned between the

gasket and interior surface of the top, wherein the magnet is configured to hold the magnetic token in place on the exterior surface of the top.

[0006] In other aspects, provided is a container system, comprising: a container; and any of the cap assemblies described herein. In some embodiments, the container comprises: a body; and a neck extending from the body of the container and forming the mouth of the container, wherein the neck has an exterior surface and an interior surface. In some embodiments, the cap assembly comprises: a top, wherein the top has an exterior surface and an interior surface; a side connected to and extending from the top, wherein the side comprises an inner wall and an outer wall, wherein the inner wall is cylindrical and configured to engage with the neck of the container; a gasket connected to the interior surface of the top; and a magnet positioned between the gasket and interior surface of the top.

[0007] In yet other aspects, provided is refillable pharmaceutical products storage kit, comprising: any of the container systems described herein; and a refill pouch. In some embodiments, the refill pouch comprises: a first compartment configured to hold pharmaceutical products; and a second compartment configured to hold the magnetic token, wherein the magnetic token in the second compartment does not come into contact with the pharmaceutical products in the first compartment.

DESCRIPTION OF THE FIGURES

[0008] The present application can be understood by reference to the following description taken in conjunction with the accompanying figures.

[0009] FIG. **1** depicts an exploded cross-sectional view of an exemplary container system, which includes a cap assembly and a container.

[0010] FIG. **2A** depicts a side cross-sectional view of an exemplary container system, in which the cap assembly is secured onto the container.

[0011] FIG. **2B** depicts a cross-sectional view of an exemplary cap assembly (left) and a view of the underside of the corresponding cap assembly (right).

[0012] FIG. **2C** depicts another cross-sectional view of the exemplary cap assembly from the top side with a magnetic token in place (left) and underside (right).

[0013] FIG. 3 depicts a bottom view of an exemplary container that can hold pharmaceutical products.

[0014] FIG. 4A depicts an exploded perspective view showing the placement of a magnetic token on the top of an exemplary cap assembly.

[0015] FIG. 4B depicts a magnetic token positioned in a recess on the exterior surface of the top of an exemplary cap assembly.

[0016] FIG. 5 depicts an exemplary magnetic token.

[0017] FIG. 6 depicts an exemplary refillable pharmaceutical products storage kit, which includes an exemplary refill pouch (front and bank depicted on left) and an exemplary container that can hold the pharmaceutical products along with their corresponding magnetic tokens to be placed on the top of the cap assembly (right).

DETAILED DESCRIPTION

[0018] The following description sets forth exemplary systems, methods, parameters and the like. It should be recognized, however, that such description is not intended as a limitation on the scope of the present disclosure but is instead provided as a description of exemplary embodiments.

[0019] In some aspects, provided herein are container systems suitable for storing pharmaceutical products, including over-the-counter medicines. The container systems are sustainably designed, and can replace wasteful, plastic pill containers with reusable containers. The reusable containers can be used to store pharmaceutical products obtained from refill pouches. Thus, in certain aspects, provided herein are also refillable pharmaceutical products storage kits that include the container system, and refill pouches. In some embodiments, the refill pouches are compostable, and also contain information about the pharmaceutical product therein that can be easily transferred to the container system, which helps to replace the traditional drug fact label on most products.

[0020] The container systems provided herein include a cap assembly that is designed for use with a container, such as a glass bottle or jar, configured to hold pharmaceutical products. In some embodiments, the cap assembly is designed to receive a magnetic token that is

provided with the refill pouches, in order to transfer drug product information to the reusable container.

[0021] The cap assembly, the container systems, and the refillable pharmaceutical products storage kits, and methods of using the foregoing, are described in further detail below.

Container System

[0022] In some aspects, provided is a container system that includes a cap assembly and a container. When the cap assembly is secured onto the container, the container system is in a closed position. The container is configured to hold any suitable products, such as pharmaceutical products. The container is designed to be reusable. For example, the user may refill the container with additional products, such as pharmaceutical products, that may be obtained from refill pouches. The cap assembly is configured to create a sealed container in the closed position, and may include additional features, such as a child resistant lock.

[0023] In some embodiments, the cap assembly includes a top that has an exterior surface and an interior surface. The exterior surface of the top is configured to receive a magnetic token. For example, in some embodiments, the exterior surface of the top has a recess on which to mount the magnetic token.

[0024] The cap assembly also includes a gasket connected to the interior surface of the top, and a magnet positioned between the gasket and interior surface of the top. The magnet is configured to hold the magnetic token in place on the exterior surface of the top. The gasket helps to provide an upward force on the cap assembly when secured onto the container and the container system is in a closed position. When the container system is in such closed position, the gasket also serves to provide a seal around the mouth of the container to prevent contents from entering/exiting the container. Finally, the gasket also helps to keep the magnet secured in the cap assembly by providing an upward force on the magnet.

[0025] The cap assembly also has a side connected to and extending from the top. The side has an exterior surface and an interior surface. In some embodiments, when the cap assembly is secured onto the container and the container system is in a closed position, the side is configured to surround the neck of the container, and the outer surface of the side aligns with the sides of the container to form a flat and continuous surface.

[0026] In some embodiments, the side of the cap assembly further includes at least one bayonet configured to hold the gasket in place. In some variations, the cap assembly includes one, two, three or four bayonets configured to hold the gasket in place. In some embodiments the cap assembly includes four bayonets spaced evenly around the cap assembly, configured to hold the gasket in place. The gasket is held in place by the upward pressure exerted by the top of the bayonet, and the downward pressure from the magnet.

[0027] In other embodiments, the side of the cap assembly further includes at least one bayonet that can lock into a receiving bayonet element positioned on the neck of the container. For example, the cap assembly is configured such that the user has to turn the cap assembly relative to the container in order to lock the bayonet into the receiving bayonet element. The gasket is configured to provide a counterforce for locking the cap assembly into the receiving bayonet element. In some embodiments, locking the bayonet into the receiving element engages a child resistant mechanism. In some embodiments, when the container system is in a closed position, at least two motions are required to disengage the child resistant mechanism and to open the container. When the container system is in a closed position, the user has to first push down on the cap assembly and then turn in order to clear the bayonet, to open the container system. In some embodiments, the gasket provides a counterforce to clear the bayonet, to open the container system.

[0028] With reference to FIG. **1**, exemplary container system **1000** is depicted. Container system **1000** includes cap assembly **1100** and container **1200**. Cap assembly **1100** includes top **1120**, side **1140**, magnet **1160**, and gasket **1180**. Top **1120** has exterior surface **1122** and interior surface **1124**. Top **1120** is configured to receive a magnetic token (not depicted in the figure) on exterior surface **1122**. The magnetic token positioned on exterior surface **1122** of top **1120** is held in place by magnet **1160**, positioned on interior surface **1124** of top **1120**. Magnet **1160** is held in place by gasket **1180**.

[0029] Container **1200** includes neck **1210** and body **1220**. Neck **1210** forms mouth **1202** of container **1200**. Neck **1210** has exterior surface **1212** and interior surface **1214**. Body **1220** is configured to hold products, such as pharmaceutical products. Body **1220** has side **1222** and bottom **1224**. Body **1220** has outer perimeter **1226**.

[0030] When cap assembly **1100** is secured onto container **1200**, container system **1000** is in a closed position, as depicted in FIG. **2A**.

[0031] The parts of the cap assembly can be described in further detail with reference again to FIG. **1**. Gasket **1180** has upper surface **1182** and lower surface **1184**. Gasket **1180** includes upper rim **1186** extending from upper surface **1182** that is configured to hold magnet **1160** in place. Gasket **1180** further includes lower rim **1188** extending from lower surface **1184**. As shown in FIG. **2A**, side **1140** and lower rim **1188** of gasket **1180** are configured to engage with neck **1202** of container **1200** when cap assembly **1100** is secured onto container **1200**.

[0032] With reference again to FIG. **1**, side **1140** of cap assembly **1100** has inner wall **1142** and outer wall **1144**. Inner wall **1142** is cylindrical and positioned to engage with neck **1210** of container **1200**. Outer wall **1144** has outer perimeter **1146** that aligns with outer perimeter **1226** of body **1220** of container **1200**.

[0033] Side **1140** may further include one or more bayonets positioned on inner wall **1142**. For example, with reference to FIGS. **1**, **2B** and **2C**, cap assembly **1100** at least bayonets **1150** and **1152**. Bayonets **1150** and **1152** provide a resting surface for gasket **1180**, and are positioned to hold gasket **1180** in place. As discussed above, gasket **1180** is held in place by the upward pressure exerted by the top of =bayonets **1150** and **1152**, and the downward pressure from magnet **1160**. Bayonets **1150** and **1152** have corresponding receiving bayonet elements positioned on exterior surface **1212** of neck **1210**. A part of a receiving bayonet element can be seen in element **1230** in FIG. **1**. When cap assembly **1100** is secured onto container **1200**, bayonet **1152** on cap assembly **1100** locks into its corresponding receiving bayonet element **1230** on container **1200**, thereby locking container system **1000** closed. When container system **1000** is closed, the user has to first push down on cap assembly **1100** and then turn in order to clear the bayonet, to open container system **1000**.

[0034] It should be understood while an exemplary embodiment of the container system is depicted in the aforementioned figures, other embodiments of the container system are envisioned. In some variations, the container systems provided herein are designed to be stackable, when user employs multiple container systems for different products, such as pharmaceutical products. In certain variations, the container systems can be color-coded, *e.g.*, by varying the color of the cap assembly, for storage of different products.

[0035] In some embodiments, the cap assembly and container may have different shapes and sizes. For example, in certain variations, the height of the cap assembly may match the height of the container. In other variations, the height of the cap assembly may be half the size of the height of the container. In some variations, the cap assembly and container may have a rounded square edge. Such shape may help to support stackability and organization in at home medicine cabinets.

[0036] The cap assembly can be made from any suitable materials. In some embodiments, the cap assembly is plastic. In some variations, the cap assembly is made from food safe materials, such as acrylonitrile butadiene styrene (ABS) or polylactic acid (PLA). In some embodiments, the cap assembly is made from a PLA/cellulose blend plastic. In some embodiments, the gasket of the cap assembly is made from a food safe material such as high-density polyethylene (HDPE).

[0037] The container may also be made from any suitable materials. For example, in some embodiments, the container is made from glass. In certain variations, the container is made from cosmetic grade, food safe glass wherein glass is specifically chosen for recyclability and elevated aesthetic. In some embodiments, the container is a sandblast painted or frosted glass bottle or jar. In some variations, the container is shatter and/or drop-resistant.

[0038] The container systems provided herein may have one or more additional features. For example, with reference to FIG. **3**, the bottom side of exemplary container **1200** is depicted. Container **1200** has feet **1240**. When two such containers are stacked on top of each other, feet **1240** help container **1200** to nest onto of the cap assembly of a second container (not depicted in the figure). Indentation **1242** at the bottom of container **1200** also helps the bottom to nest with the cap assembly of a second container. For example, such a design feature provides over a 45 degree level of angular lean. In other embodiments, the interior design of the container includes specific angular design features which can help to prevent products in the container from getting stuck at the corners and sides of the container.

Magnetic Token

[0039] The container systems described herein are designed to receive a magnetic token that contains information about the contents stored in the reusable container. In some

variations, the magnetic token is provided in the refill pouch, whose contents (*e.g.*, pharmaceutical products) are stored in the reusable container.

[0040] With reference to FIGS. **4A** and **4B**, exemplary container system **1000** is configured to receive magnetic token **4002**. Magnetic token **4002** fits into recess **1126**, positioned on exterior surface **1122** of cap assembly **1100**.

[0041] In certain embodiments, the container systems may have one or more additional features to allow release of the magnetic token from the recess positioned on the exterior surface of the cap assembly. In some embodiments, the recess positioned on the exterior surface of the cap assembly further comprises an indentation in one corner of the recess wherein, the indentation allows a finger of the user to release the magnetic token from the recess. In some variations the indentation is round. In some embodiments, the magnetic token is thick or stiff enough so as to help with the removal of the magnetic token from recess positioned on the exterior surface of the cap assembly.

[0042] The token may include any suitable information about the corresponding contents held in the container. For example, with reference to FIG. **5**, exemplary token **5000** is depicted. Token **5000** may include drug facts, prescription information and/or QR code. In some embodiments, the drug facts include the category (e.g. allergy relief, pain and fever, sleep and stress, digestive health, allergy relief, pain relief, sleep aid, gas relief, nasal decongestant), uses (e.g. antihistamine, seasonal allergies, pain relief, fever reducer, inflammation, insomnia, stress, gas, bloating, nasal congestion, sinus pressure, headache), name, side-effects (e.g. drowsy, non-drowsy), strength (e.g. equal, strong, light) and/or dosage of a pharmaceutical product. In some embodiments, the prescription information includes lot information, expiration information, and/or symbols for visualization of drug characteristics. In some embodiments, the QR code can be used for digital integration. As discussed above, the use of such token allows for the replacement of traditional drug product labels found on containers.

[0043] Information can be provided on both sides of the token. With reference to FIG. **6**, token **5000** has front side **5002** and back side **5004**. For example, front side **5002** may have information related to drug facts, and back side **5004** may have prescription information and/or QR code.

[0044] In some embodiments, the magnetic token is recyclable. The token may be made from any suitable materials, including materials that make the token magnetic. In some embodiments, the magnetic token is a galvanized steel sheet. In some embodiments, the galvanized steel sheet is printed with color and text. In some embodiments, the magnetic token is color coded wherein the color coding allows color categorization of the products (e.g., pharmaceutical products) and integration with a color coded cap assembly.

Refillable Pharmaceutical Products Storage Kit

[0045] In other aspects, provided is a refillable pharmaceutical products storage kit that includes any of the container systems described herein, and at least one refill pouch. In some embodiments, the refill pouch includes a first compartment configured to hold suitable products, such as pharmaceutical products; and a second compartment configured to hold the magnetic token The magnetic token in the second compartment does not come into contact with the products in the first compartment.

[0046] In some embodiments, a first tear line is positioned along the first compartment, wherein, when a user tears the refill pouch along the first tear line, an opening is formed in the first compartment to access the pharmaceutical products therein; and a second tear line is positioned along the second compartment, wherein, when a user tears the refill pouch along the second tear line, an opening is formed in the second compartment to access the magnetic token therein.

[0047] In other embodiments, the first compartment and/or the second compartment are configured to be independently reclosable.

[0048] With reference to FIG. **6**, a refillable pharmaceutical products storage kit comprising container system **1000** and refill pouch **6000** is depicted. Refill pouch **6000** is constructed from two pieces of material, front material **6002** and back material **6004**. Front material **6002** and back material **6004** are joined by seal **6020** around their perimeters. A second seal **6022** extends crosswise, dividing pouch **6000** into a first compartment **6040** and a second compartment **6042**. First compartment **6040** is configured to hold pharmaceutical products. Second compartment **6042** is configured to hold a magnetic token, wherein the magnetic token in the second compartment **6042** does not come into contact with the pharmaceutical products in first compartment **6040**. First tear line **6060** is positioned along first compartment **6040**. Second tear line **6062** is positioned along second compartment **6042**.

[0049] In some embodiments, the pouch is child resistant. In some embodiments the pouch is stackable. In some embodiments to pouch is metalized. In some embodiments, the pouch has a wide opening on the top to help with the refilling and pouring process.

[0050] In some embodiments, the size of the first compartment can accommodate a plurality of pharmaceutical products, such as medicine pills or tablets. In some variations, the second compartment includes a pamphlet with drug facts in addition to the magnetic token. In some embodiments, the size of the second compartment can accommodate the magnetic token and optionally a pamphlet, which do not touch the pills within the pouch.

[0051] In some embodiments, the pouch provides information related to pharmaceutical products. In some embodiments, the information includes drug facts. In some embodiments, the drug facts include the category, uses, warnings, directions for use, and/or active and inactive ingredients for the pharmaceutical products therein.

[0052] In some embodiments, the pouch is made from bio-based or compostable materials. In some embodiments, the compostable materials meet the American Society for Testing and Materials (ASTM) D6400 standards. In some embodiments, the compostable materials meet stability standards per drug type based on monograph and Abbreviated New Drug Application products.

[0053] In some embodiments, the compostable material is multi-layered. In some embodiments, the compostable material comprises at least three layers. In some embodiments, the compostable material has three layers, including a clear coated compostable print film, a compostable adhesive, and a compostable sealant film. In some embodiments, the material is thicker, harder to peel for child resistance and/or feels more robust. In some embodiments, the three layers are a metallized compostable print film, a compostable adhesive, and a compostable sealant film. In some embodiments, the compostable material is thinner, lighter weight, easy to peel and/or feels more sustainable. In some embodiments, the pouch is made from a recyclable material. In some embodiments, the recyclable material comprises ethylene vinyl alcohol film.

[0054] In some embodiments, the refillable pharmaceutical products storage kit further includes a refill guide with instructions.

CLAIMS

What is claimed is:

1. A cap assembly, comprising:

a top, wherein the top has an exterior surface and an interior surface,

wherein the exterior surface of the top is configured to receive a magnetic token;

a side connected to and extending from the top;

a gasket connected to the interior surface of the top; and

a magnet positioned between the gasket and interior surface of the top,

wherein the magnet is configured to hold the magnetic token in place on the exterior surface of the top.

2. A cap assembly for a container, wherein the container comprises:

a body, wherein the body of the container has an outer perimeter; and

a neck extending from the body and forming the mouth of the container,

wherein the neck has an exterior surface and an interior surface,

wherein the cap assembly comprises:

a top, wherein the top has an exterior surface and an interior surface;

a side connected to and extending from the top,

wherein the side comprises an inner wall and an outer wall,

wherein the inner wall is cylindrical and configured to engage with the neck of the container, and

wherein the outer wall has an outer perimeter in alignment with the outer perimeter of the container;

a gasket connected to the interior surface of the top; and

a magnet positioned between the gasket and interior surface of the top.

3. The cap assembly of claim 2, wherein the interior surface of the top comprises a recess configured to receive the magnet.

4. The cap assembly of claim 2 or 3, wherein the exterior surface of the top comprises a recess configured to receive a magnetic token, and wherein the magnet in the cap assembly is configured to hold the magnetic token in place.

5. The cap assembly of any one of claims 2 to 4, wherein the outer wall of the side surrounds the neck and extends from the top of the cap assembly to the body of the container.

6. The cap assembly of any one of claims 2 to 5, wherein the height of the inner wall of the side is shorter than the height than the outer wall of the side.

7. The cap assembly of any one of claims 2 to 6, wherein the container further comprises a receiving bayonet element positioned on the exterior surface of the neck of the container, and

wherein the side further comprises at least one bayonet positioned on the inner wall, wherein the at least one bayonet is configured to engage with the receiving bayonet element on the neck of the container.

8. The cap assembly of claim 7, wherein the at least one bayonet is positioned to hold the gasket in place.

9. The cap assembly of any one of claims 2 to 8, wherein the gasket has an upper surface and a lower surface,

wherein the upper surface of the gasket is connected to the interior surface of the top,

wherein the gasket further comprises a rim extending from the lower surface of the gasket, and

wherein the inner wall of the side and the rim of the gasket are configured to engage with the neck of the container when the cap assembly is secured onto the container.

10. The cap assembly of any one of claims 1 to 9, wherein the top, and the outer wall of the side extending from the top have a perimeter in the shape of a square with rounded edges.

11. A container system, comprising:

a container, wherein the container comprises:

a body; and

a neck extending from the body of the container and forming the mouth of the container, wherein the neck has an exterior surface and an interior surface; and

a cap assembly configured to engage with the neck of the container, wherein the cap assembly comprises:

a top, wherein the top has an exterior surface and an interior surface;

a side connected to and extending from the top,

wherein the side comprises an inner wall and an outer wall,

wherein the inner wall is cylindrical and configured to engage with the neck of the container,

a gasket connected to the interior surface of the top; and

a magnet positioned between the gasket and interior surface of the top.

12. The container system of claim 11, wherein the interior surface of the top of the cap assembly comprises a recess configured to receive the magnet.

13. The container system of claim 11 or 12, wherein the exterior surface of the top of the cap assembly comprises a recess configured to receive a magnetic token, and wherein the magnet in the cap assembly is configured to hold the magnetic token in place.

14. The container system of any one of claims 11 to 13, wherein the container further comprises: a receiving bayonet element positioned on the exterior surface of the neck of the container, and

wherein the side further comprises at least one bayonet positioned on the inner wall, wherein the at least one bayonet is configured to engage with the receiving bayonet element on the neck of the container.

15. The container system of claim 14, wherein the at least one bayonet is positioned to hold the gasket in place.

16. The container system of any one of claims 11 to 15, wherein the gasket has an upper surface and a lower surface,

wherein the upper surface of the gasket is connected to the interior surface of the top of the cap assembly,

wherein the gasket further comprises a rim extending from the lower surface of the gasket, and

wherein the side of the cap and the rim of the gasket are configured to engage with the neck of the container when the cap assembly is secured onto the container.

17. The container system of any one of claims 11 to 16, wherein the top of the cap assembly and the body of the container are both in the shape of a square with rounded edges.

18. The container system of claim 17, wherein the cap assembly and body of the container both have outer perimeters that are aligned.

19. The container system of any one of claims 11 to 18, wherein the container comprises glass.

20. The container system of any one of claims 11 to 19, wherein the body of the container is configured to receive and hold pharmaceutical products.

21. A refillable pharmaceutical products storage kit, comprising:

a container system of claim 20; and

a refill pouch, comprising:

a first compartment configured to hold pharmaceutical products;

a second compartment configured to hold the magnetic token,

wherein the magnetic token in the second compartment does not come into contact with the pharmaceutical products in the first compartment.

22. The kit of claim 21, wherein the refill pouch further comprises:

a first tear line positioned along the first compartment, wherein, when a user tears the refill pouch along the first tear line, an opening is formed in the first compartment to access the pharmaceutical products therein; and

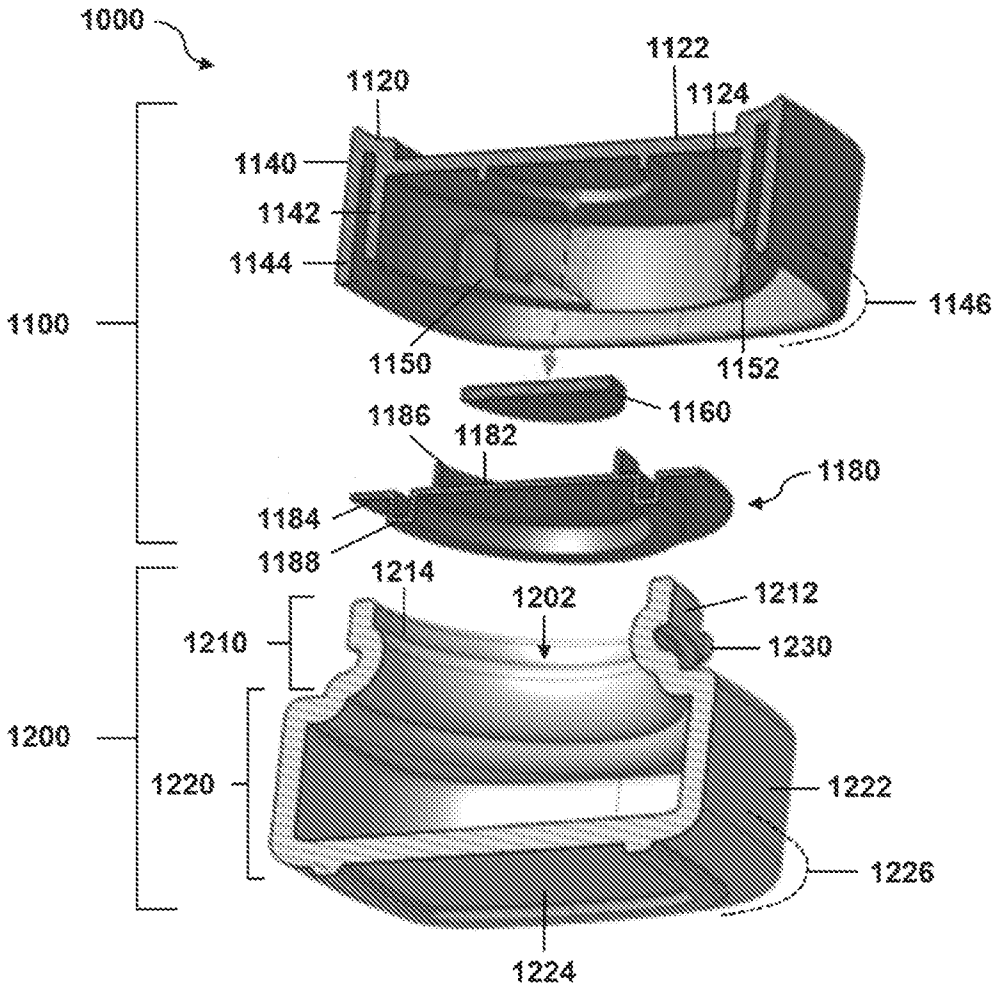
a second tear line positioned along the second compartment, wherein, when a user tears the refill pouch along the second tear line, an opening is formed in the second compartment to access the magnetic token therein.

23. The kit of claim 21, wherein: (i) the first compartment of the refill pouch is configured to be reclosable; (ii) the second compartment of the refill pouch is configured to be reclosable; or both (i) and (ii).

24. The kit of any one of claims 21 to 23, wherein the magnetic token provides information related to the pharmaceutical products contained in the first compartment of the refill pouch.

25. The kit of any one of claims 21 to 24, wherein the container system is configured to store and hold the pharmaceutical products released from the first compartment of the refill pouch.

26. The kit of any one of claims 21 to 25, wherein the magnetic token comprises galvanized steel.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1142
1144
1146
1100
1150
1152
1160
1186
1182
1180
1184
1188
1214
1202
1212
1210
1230
1200
1220
1222
1226
1224

FIG. 1

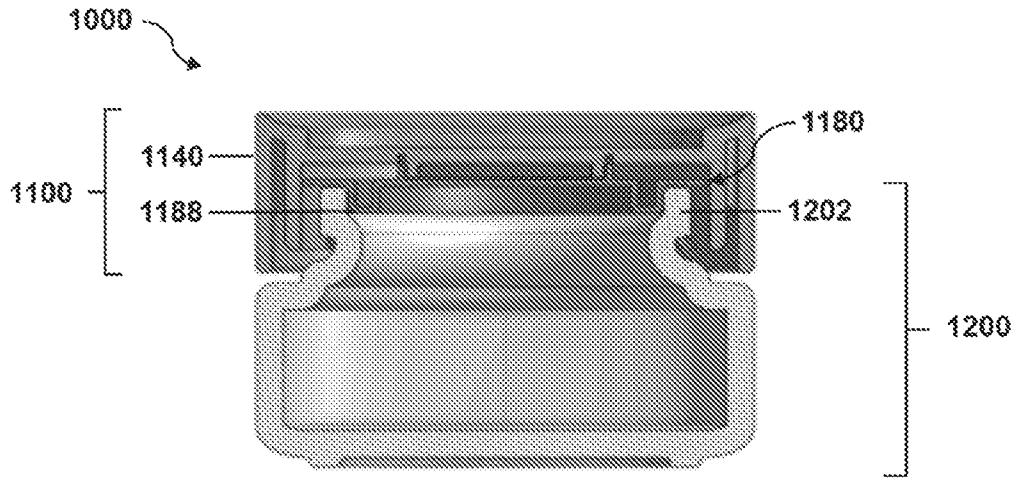

FIG. 2A

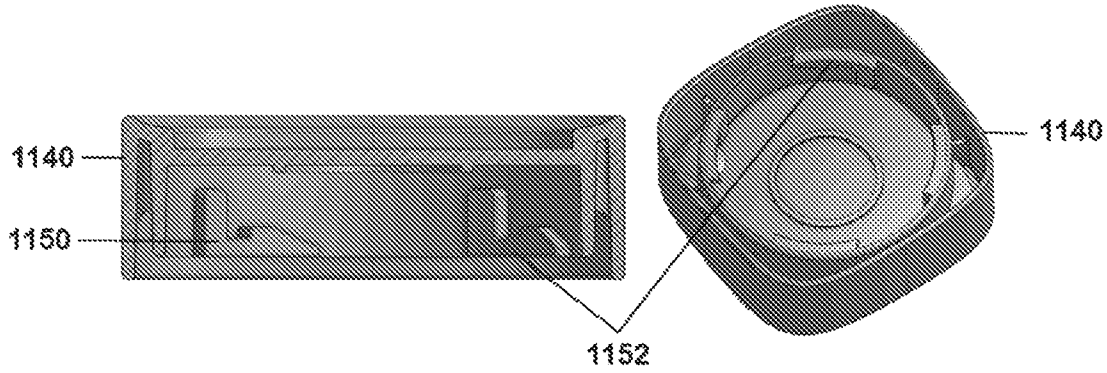

FIG. 2B

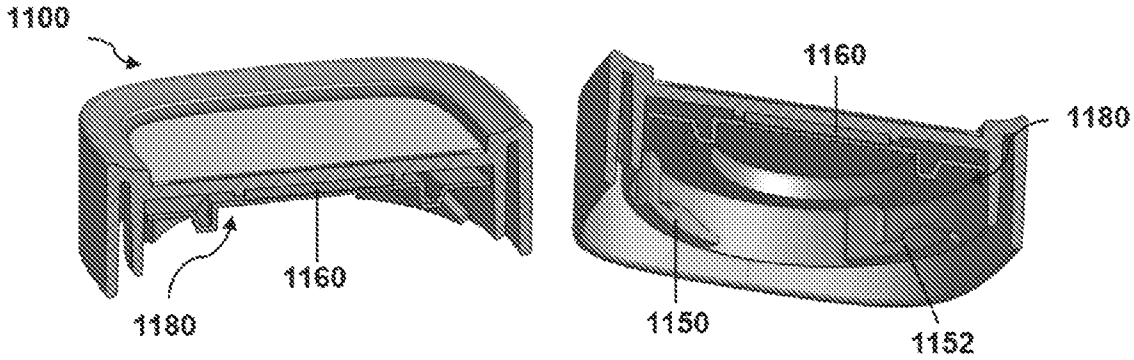

FIG. 2C

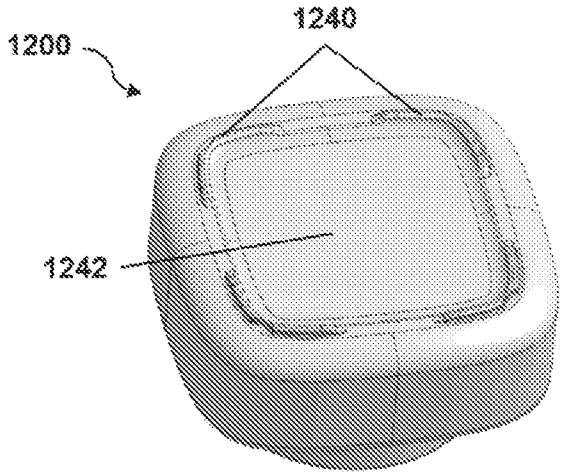

FIG. 3

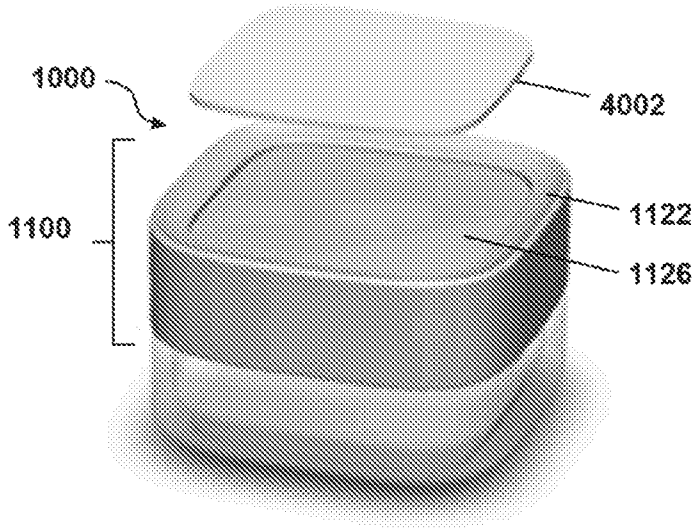

FIG. 4A

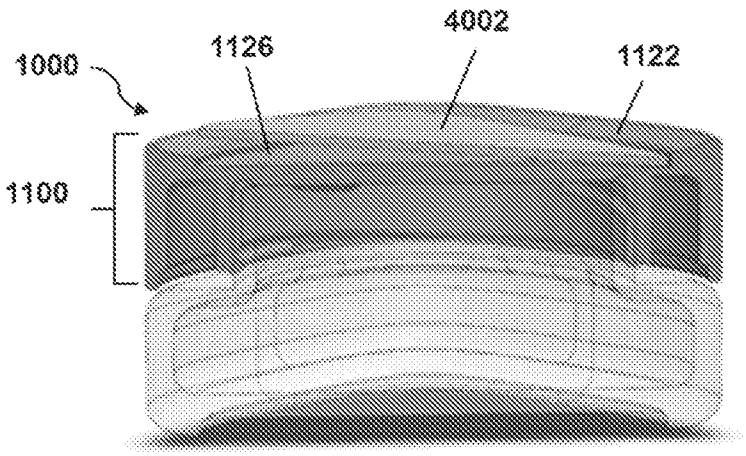

FIG. 4B

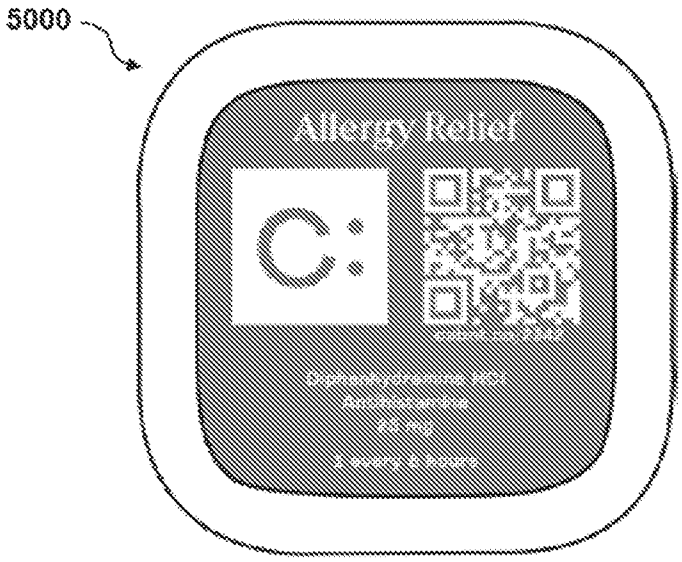
5000
Allergy Relief

FIG. 5

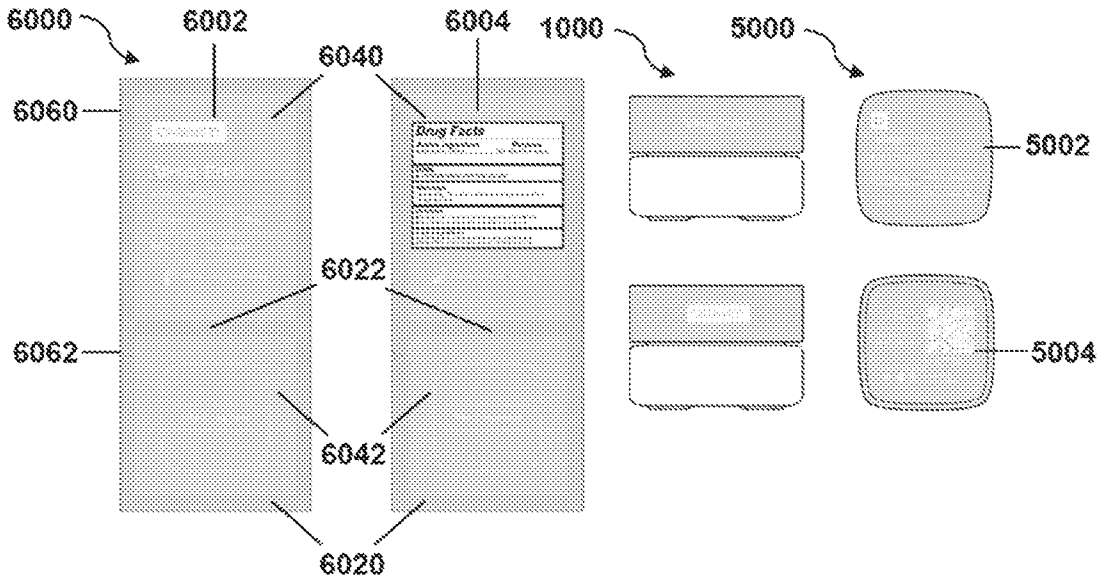
6000
6002
6004
6040
1000
5000
6060
Drug Facts
5002
6022
6062
5004
6042
6020

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2022/072216

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B65D 51/24; A61J 1/00; A61J 1/03; A61J 3/06; B65D 25/02; B65D 41/04; B65D 41/06 (2022.01)
CPC - B65D 51/24; A61J 1/00; A61J 1/03; A61J 3/06; B65D 25/02; B65D 41/04; B65D 41/06; B65D 2313/04 (2022.05)

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)
see Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
see Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
see Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2020/0361672 A1 (YETI COOLERS LLC) 19 November 2020 (19.11.2020) entire document	1-4, 11-13
A	US 2014/0061199 A1 (DALBEC) 06 March 2014 (06.03.2014) entire document	1-4, 11-13
A	US 2,672,257 A (SIMMONDS) 16 March 1954 (16.03.1954) entire document	1-4, 11-13
A	CN 2233376 Y (YU NINGYAN) 21 August 1996 (21.08.1996) see machine translation	1-4, 11-13

☐ Further documents are listed in the continuation of Box C. ☐ 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
"D" document cited by the applicant in the international application
"E" earlier application or patent 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
27 June 2022	JUL 18 2022
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	Authorized officer Taina Matos Telephone No. PCT Helpdesk: 571-272-4300

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2022/072216

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 5-10, 14-26
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.