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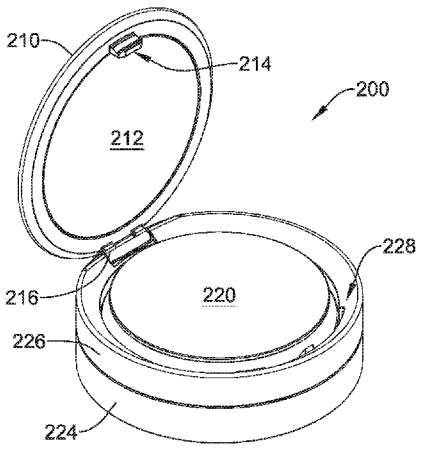
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(54) Title: REVOLVING COMPACT



(57) Abstract: Compacts designed to hold a product and having a lid, and upper housing portion, and a lower housing portion. The upper housing portion and the lower housing portion are twistable relative to one another, with the lid secured to the upper housing portion and twisting therewith. The lid and lower housing portion comprise engaging structures to secure the lid in a closed position when the respective engaging structures are aligned with one another. When the upper housing portion and lid are twisted relative to the lower housing portion, the lid is free to open upon reaching a sufficient amount of twisting movement.

Figure 4

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GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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REVOLVING COMPACT

CROSS REFERENCE TO RELATED APPLICATIONS

The present application claims the benefit of and priority to U.S. Provisional Patent Application Serial No. 62/191,251, filed on July 10, 2015, titled REVOLVING COMPACT, the entire disclosure of which is incorporated herein by reference.

FIELD

The present application relates to the field of cosmetic containers, more particularly to the design and functionality of cosmetic compacts.

BACKGROUND

Various compacts are known in the art for containing and allowing convenient access for a user. Some such products are also airtight to protect volatile products and keep fine powders and the like from creating a mess. New and alternative approaches to such devices are desired.

OVERVIEW

In an illustrative example, a compact is provided which is designed to hold a product in a generally central portion thereof and having a lid, and upper housing portion, and a lower housing portion. The upper housing portion and the lower housing portion are twistable relative to one another, with the lid secured to the upper housing portion and twisting therewith. When the upper housing portion and lid are twisted relative to the lower housing portion, the lid is released from being held in a closed position. In one illustrative example, the lower housing portion includes posts or clips which are configure to engage slots in the lid, with twisting motion misaligning the clips from the slots allowing automatic opening of the lid. In another illustrative example, the lid includes one or more tabs that extend downward to engage one or more posts in the lower housing portion when the lid is closed, with the alignment of the one or more posts and the one or more tabs allowing a twisting motion to cause disengagement, allowing the lid to open.

The compact may be an airtight compact. The lid may include a mirror on an interior side thereof. The twisting motion may take place against a spring tensioner. The lid may include a spring hinge which provides automatic opening action, or it may

allow manual opening/closing without the spring hinge. The lid may be urged open a small amount using a structure, such as a ramped or angled post on the lower housing portion.

A first non-limiting example takes the form of a compact for containing a cosmetic product comprising: a lid having a hinge; an upper housing portion; and a lower housing portion twistable relative to the lid and upper housing portion; wherein the lid is configured to be released from being held in a closed position by twisting movement of the lower housing portion relative to the lid and upper housing portion.

A second non-limiting example takes the form of a compact as in the first non-limiting example, wherein the lid is configured to automatically open using a spring hinge upon reaching a sufficient amount of twisting movement. In an alternative, the lid may be pushed open by a ramp on the lower housing portion as a twisting motion continues past a point of release.

A third-non-limiting example takes the form of a compact as in any preceding non-limiting example, wherein the lower housing portion includes one or more posts which are configured to engage one or more corresponding structures of the lid to secure the lid in a closed position when the one or more posts are aligned with the one or more corresponding structures of the lid.

A fourth non-limiting example takes the form of a compact as in the third non-limiting example, wherein the upper housing portion and lower housing portion are configured to twist relative to one another such that the one or more posts of the lower housing portion become misaligned with corresponding structures in the lid, allowing opening of the lid by action of the spring in the lid hinge.

A fifth non-limiting example takes the form of a compact as in the third non-limiting example, wherein a spring is coupled to each of the lower housing portion and the upper housing portion to provide resistance against twisting and bias the lower housing portion, relative to the upper housing portion and lid, in a position where the posts and corresponding structure of the lid are aligned relative to one another to secure the lid in the closed position.

A sixth non-limiting example takes the form of a compact as in the third non-limiting example, wherein the one or more corresponding structures of the lid each comprise one or more tabs having a ridge thereon to engage the one or more posts of the lower housing portion.

A seventh non-limiting example takes the form of a compact as in the third non-limiting example, wherein the one or more corresponding structures of the lid each comprise one or more slots configured to engage the one or more posts of the lower housing portion.

An eighth non-limiting example takes the form of a compact as in any of the preceding non-limiting examples, wherein the lid is configured with a gasket and the upper housing is configured to mate with the gasket to provide an airtight container when the lid is closed.

A ninth non-limiting example takes the form of a compact as in any of the preceding non-limiting examples, wherein the lid comprises a mirror on an interior side thereof.

A tenth non-limiting example takes the form of a compact as in any of the preceding non-limiting examples, wherein a spring is coupled to each of the lower housing portion and the upper housing portion to provide resistance against twisting, to maintain a default position in which the posts or clips of the lower housing portion are aligned with the slots in the lid.

An eleventh non-limiting example takes the form of a compact as in the tenth non-limiting example, wherein the lower housing portion further comprises a spring guide to hold the spring in place.

A twelfth non-limiting example takes the form of a compact as in any of the preceding non-limiting examples, wherein the upper housing portion comprises a downward extending post, and the lower housing portion comprises an upward extending cylinder that receives the downward extending post of the upper housing portion.

A thirteenth non-limiting example takes the form of a compact as in any of the preceding non-limiting examples, wherein the lid hinge is secured to the upper housing portion such that the lid and upper housing move together when being twisted relative to the lower housing portion, and the lid is configured to open relative to each of the lower and upper housing portions.

This overview is intended to provide an overview of subject matter of the present patent application. It is not intended to provide an exclusive or exhaustive explanation of the invention. The detailed description is included to provide further information about the present patent application.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, which are not necessarily drawn to scale, like numerals may describe similar components in different views. Like numerals having different letter suffixes may represent different instances of similar components. The drawings illustrate generally, by way of example, but not by way of limitation, various embodiments discussed in the present document.

Figure 1 is a perspective view of an illustrative compact;

Figure 2 is an exploded view of an illustrative compact;

Figure 3 shows details of the lower housing portion of the compact of Figure 1;

Figure 4 is a perspective view of another illustrative compact;

Figure 5 is an exploded view of the illustrative compact of Figure 4;

Figure 6 shows details of the lower housing portion of the compact of Figure 4; and

Figure 7 shows select details of an upper housing portion of the compact of Figure 4.

DETAILED DESCRIPTION

Figure 1 is a perspective view of an illustrative compact. The compact 10 includes a lid 12, a lower housing portion 14, and an upper housing portion 16. The lower housing portion 14 may be twisted relative to the upper housing portion 16 and lid 12. The lid 12 includes one or more slots or tabs 18 which are adapted to engage with corresponding post(s) 20 that form part of or are attached to the lower housing portion 14. In this example, tabs are shown at 18; slots may be used instead.

When the slots or tabs 18 are engaged with the corresponding posts 20, the lid 12 is latched shut. Twisting motion allows the tabs to be disengaged from the posts 20, allowing the compact to be opened.

A quantity of product 22 may be carried in the compact 12; a single "puck" of product is shown but those skilled in the art will recognize that multiple compartments may be provided instead. For example, the product may include two halves with a separator, pie shaped pieces, or other designs. A mirror 24 may optionally be provided on the interior side of the lid 12.

As noted, the lower housing portion 14 can be twisted relative to the upper housing portion 16. Doing so will misalign the posts 20 relative to the slots or tabs 18 of the lid 12. Once twisted far enough, the posts 20 and slots or tabs 18 will become disengaged, allowing the lid to open. In some examples, the lid 12 may open manually,

that is, without assistance of a spring or biasing member. In other examples, a spring hinge automatically opens lid 12 once the slots or tabs 18 disengage from their corresponding posts 20. The twisting action of the upper housing portion 16 may occur against spring tension applied by a spring contained in the lower housing portion 14.

Figure 2 is an exploded view of an illustrative compact. Beginning at the top, the lid 50 is illustrated with its hinge 52 shown. The hinge 52 may be designed for manual opening, or may be spring loaded to open when not held closed. A mirror 60 is optionally provided as is a retainer ring 80 for the mirror, with the retainer ring 80 adapted to mate with a retainer ring channel or slots (not shown) in the lid 50.

A gasket 70 is shown. The gasket 70 is optional; for example, a compact that is not air tight may omit the gasket 70. For a sealed compact, the gasket 70 operates to provide an air tight seal, in cooperation with a base insert 100, which is provided to contain the product 90, which may be, for example, a puck of cosmetic product. Other implementations may include multiple compartments in the base insert 100 so that more than one product is contained in the compact.

Next is the upper housing portion 110, which includes a slot 112 in which the hinge 52 of the lid 50 may rest. The upper housing portion and the lid may be snap fit or adhesively bonded together, or connected together by other methods or mechanisms. For example, in the embodiment shown, small openings are located on either side of the slot 112 for entry of a pin to secure the hinge 52 to the upper housing portion 110.

The lower housing portion 140 is also shown, and has placed therein a spring 130 and spring guide 120. The spring guide 120 holds the spring in place 130 once assembled. The spring 130 includes a first end 132, which is "on top" in the Figure, and which during assembly is inserted in a slot on the upper housing portion 110 to hold it therein. The second end 134 of the spring 130 is engaged by the lower housing portion 140, such that the spring 130 is biased against the twisting motion that is needed to release the lid 50 from the hold of the posts (see Figure 3) on the lower housing portion 140.

Figure 3 shows select details of the lower housing portion 140 of the compact of Figure 2. The lower housing portion 140 includes posts 142 that are used as discussed relative to Figure 1 to secure the lid in a closed configuration. For example, the posts 142 can engage tabs or slots provided in the lid; with the lid fully closed, twisting of the upper housing portion relative to lower housing portion 140 is used to engage or disengage the posts 142 from corresponding structures of the lid. The lower

housing portion includes a post 144 to on which the spring 130 (Figure 2) is placed, as well as a clip or slot 146 in which the second end 134 (Figure 2) of the spring 130 (Figure 2) is secured. An angled post 148 is also shown and may be included to force the lid opened as it is twisted beyond the point of being released from being held closed by posts 142.

Figures 4-7 show another illustrative embodiment, this time with fewer components included in the design. Figure 4 shows the compact 200 as including a lid 210, having an optional mirror 212 and an engaging structure in the form of a tab 214 that is adapted to engage with a corresponding structure in the lower housing portion 224. One tab 214 is shown; any suitable number of tabs 214 may be provided if desired. An upper housing portion 226 is also shown, with the lid 210 including a hinge 216 secured to the upper housing portion 226. The hinge 216 may include a spring, or it may allow for manual opening of the lid 210.

The upper and lower housing portions 224, 226 support and generally contain product 220, shown as a puck of product; other product structure or format may be used including, for example, a sectioned product having several different colors or product types available to the user. The upper housing portion 226 includes a slot that allows the tab 214 to engage the engaging structures of the lower housing portion 224.

Figure 5 shows further details of the embodiment of Figure 4 with an exploded view. As can be seen, in this embodiment, fewer parts are used than in that of Figure 1-3. The lid 210, with hinge 216, may optionally have a mirror 212 secured thereto using, for example, snap fit or adhesive or a combination thereof. A product puck 220 is shown for illustrative purposes.

The upper housing portion 226 is shown with a slot at 230 to allow engagement of the lid 210 and engaging structure(s) (not shown) thereof, to the lower housing portion 224. For example, here, an engaging post 228 is shown in the lower housing portion 224, in alignment with the slot 230, to allow engagement to the lid 210.

Another slot is shown at 232 on the upper housing portion 226 for receiving the hinge 216 of lid 210. Openings are shown on either side of slot 232 to allow a pin to be placed to secure the hinge 216 and lid 210 to the upper housing portion. Snap fit or any other suitable mechanism may be used instead. When a twisting movement is effected on the upper housing portion 226 relative to the lower housing portion 224, the lid moves with the upper housing portion 226. The hinge 216 may be spring loaded to

automatically open upon release of the lid relative to the lower housing portion, or it may simply allow manual opening.

The lower housing portion 224 is shown with additional detail in Figure 6. The engaging post 228 extends upward therefrom, as does an angled tab 234. The angled tab 234 forces the lid 210 to start opening in response to twisting beyond a release point where the tab (not shown) of the lid 210 becomes disengaged from the engaging post 228 of the lower housing portion. For manual opening, the angled tab 234 may cause opening by a few millimeters to allow a user to access the edge of the lid 210 with a fingernail, for example. The engaging post may, for example, have a ledge facing downward thereon to engage a corresponding engaging structure of the lid 210 such as a tab 214 as shown in Figure 4.

Figure 7 illustrates some design details of the underside of the upper housing portion 226. As can be seen in this view, there is a centrally located post 264 used as outlined below. In addition, a stop 260 can be seen as well as a slot 262. The stop 260 can be used to engage a structure in the lower housing portion 224 to prevent twisting the upper housing portion 226 relative to the lower housing portion 224 in an undesired direction. The slot 262 can receive an end of the spring 250 (Figure 5).

Referring to each of Figures 6 and 7, an upward extending cylindrical structure 240 with a hollowed center is shown in the center of the lower housing portion 224 in Figure 6. This element 240 is used to facilitate smooth twisting relative to the upper housing portion 226 which, as shown below in Figure 7, has a corresponding post 264 to engage element 240. Elements 240, 264 may be snap fit together if desired. A like combination of structures may also be used in the embodiment of Figures 1-3, by hollowing post 144 (Figure 3) and providing a post on the bottom of the lower housing portion 110. In another example, the cylindrical structure 240 may not be hollowed and may be inserted into a hollowed cylinder that replaces post 264 of the upper housing portion 226.

Tabs 246, 248 (which may be referred to as posts instead, if desired) are sized and spaced to secure one end of the spring 250 (Figure 5). In some examples, a spring guide is included as indicated in Figure 3 above. Alternatively, as shown in the embodiment of Figures 4-7 the upper housing portion 226 may have a smooth lower surface that serves to keep the spring 250 (Figure 5) suitably retained.

When fully assembled, the spring 250 biases the upper housing portion such that the engaging structure (tab 214 in Figure 4) of the lid 210 is aligned with the

engaging structure (post 228) of the base 224. The stop 260 arrests further movement upon reaching the fully aligned preferential position – that is, the stop 260 prevents the spring 250 from twisting the lower housing portion 224 beyond this engaged position relative to the upper housing portion. When the lid is closed and in the biased or preferential position caused by the spring 250, the respective engaging structures 214 and 228 keep the lid 210 in a secured, closed position. Twisting movement against the spring bias causes the engaging structures to become disengaged, and the lid 210 can then be opened.

A further illustrative example takes the form of a compact for containing a cosmetic product comprising: a lid having a hinge; an upper housing portion; and a lower housing portion twistable relative to the lid and upper housing portion; wherein: the lid comprises first engaging means (such as tabs 18 in Figure 1, one or more slots in place of the tabs, or a tab 214 in Figure 4); the lower housing portion comprises second engaging means (such as posts 142 in Figure 3 or post 228 in Figures 5-6); such that the first engaging means is configured to secure the lid to the second engaging means, against pressure of the lid biasing means, when the lower housing portion and upper housing portion are aligned in a preferential alignment with the lid closed; and the lower housing portion comprises twist biasing means (such as spring 132 in Figure 3 in combination with posts 146 in Figure 3, or spring 250 in combination with posts or tabs 246, 248 in Figure 5) to bias the lower housing portion into the preferential alignment with the upper housing position when the lid is open or closed, further wherein the upper housing portion and lower housing portion are twistable from the preferential alignment to a position of misalignment to disengage the first and second biasing means from one another and enable the lid biasing means to open the lid.

Additionally or alternatively, the further non-limiting example may be configured such that the lid hinge is secured to the upper housing portion such that the lid and upper housing move together when being twisted relative to the lower housing portion. The lid may, in a further embodiment, include lid biasing means (such as a hinge 52 in Figure 2 or hinge 216 in Figure 4) for biasing the lid in an open position

Each of the above examples can stand on its own, or can be combined in various permutations or combinations with one or more of the other examples.

The above detailed description includes references to the accompanying drawings, which form a part of the detailed description. The drawings show, by way of illustration, specific embodiments in which the invention can be practiced. These

embodiments are also referred to herein as "examples." Such examples can include elements in addition to those shown or described. However, the present inventors also contemplate examples in which only those elements shown or described are provided. Moreover, the present inventors also contemplate examples using any combination or permutation of those elements shown or described (or one or more aspects thereof), either with respect to a particular example (or one or more aspects thereof), or with respect to other examples (or one or more aspects thereof) shown or described herein.

In this document, the terms "a" or "an" are used, as is common in patent documents, to include one or more than one, independent of any other instances or usages of "at least one" or "one or more." Moreover, in the following claims, the terms "first," "second," and "third," etc. are used merely as labels, and are not intended to impose numerical requirements on their objects.

The above description is intended to be illustrative, and not restrictive. For example, the above-described examples (or one or more aspects thereof) may be used in combination with each other. Other embodiments can be used, such as by one of ordinary skill in the art upon reviewing the above description.

The Abstract is provided to comply with 37 C.F.R. §1.72(b), to allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims.

Also, in the above Detailed Description, various features may be grouped together to streamline the disclosure. This should not be interpreted as intending that an unclaimed disclosed feature is essential to any claim. Rather, inventive subject matter may lie in less than all features of a particular disclosed embodiment. Thus, the following claims are hereby incorporated into the Detailed Description as examples or embodiments, with each claim standing on its own as a separate embodiment, and it is contemplated that such embodiments can be combined with each other in various combinations or permutations. The scope of the invention should be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled.

The Claimed Invention Is:

1. A compact for containing a cosmetic product comprising:
a lid having a hinge;
an upper housing portion; and
a lower housing portion twistable relative to the lid and upper housing portion;
wherein the lid is configured open in response to twisting movement of the lower housing portion relative to the lid and upper housing portion.

2. The compact of claim 1 wherein the hinge comprises a hinge spring such that the lid is configured to automatically open upon reaching a sufficient amount of twisting movement.

3. The compact of claim 1 wherein the lid comprises a gasket, and the upper housing is configured to mate with the gasket to provide an airtight container when the lid is closed.

4. The compact of claim 1 wherein the lid comprises a mirror on an interior side thereof.

5. The compact of claim 1 wherein a housing spring is coupled to each of the upper and lower housing portions to provide resistance against twisting, to maintain a default position in which the posts or clips of the lower housing portion are aligned with the slots in the lid.

6. The compact of claim 5 wherein the lower housing portion further comprises a spring guide to hold the spring in place.

7. The compact of claim 5 wherein the upper housing portion comprises a downward extending post, and the lower housing portion comprises an upward extending cylinder that receives the downward extending post of the upper housing portion.

8. The compact of claim 1 wherein the lid hinge is secured to the upper housing portion such that the lid and upper housing portion move together when being twisted relative to the lower housing portion, and the lid is configured to open relative to each of the lower and upper housing portions.

9. The compact of claim 1 wherein the lower housing portion comprises an angled post for urging the lid toward an open position as the lid and upper housing portion are twisted relative to the lower housing portion, and the lid hinge allows manual opening of the lid.

10. The compact of any of claims 1-4 or 8-9, wherein the lower housing portion includes one or more posts which are configured to engage one or more corresponding structures of the lid to secure the lid in a closed position when the one or more posts are aligned with the one or more corresponding structures of the lid.

11. The compact of claim 10 wherein the upper and lower housing portions are configured to twist relative to one another such that the one or more posts of the lower housing portion become misaligned with corresponding structures in the lid, allowing the lid to open.

12. The compact of claim 10 wherein a spring is coupled to each of the lower housing portion and the upper housing portion to provide resistance against twisting and bias the lower housing portion, relative to the upper housing portion and lid, in a position where the posts and corresponding structure of the lid are aligned relative to one another to secure the lid in the closed position.

13. The compact of claim 10 wherein the one or more corresponding structures of the lid each comprise one or more tabs having a ridge thereon to engage the one or more posts of the lower housing portion.

14. The compact of claim 10 wherein the one or more corresponding structures of the lid each comprise one or more slots configured to engage the one or more posts of the lower housing portion.

15. A compact for containing a cosmetic product comprising:

a lid having a lid hinge;

an upper housing portion; and

a lower housing portion twistable relative to the lid and upper housing portion; wherein:

the lid comprises first engaging means;

the lower housing portion comprises second engaging means;

such that the first engaging means is configured to secure the lid to the second engaging means, when the lower housing portion and upper housing portion are aligned in a preferential alignment with the lid closed; and

the lower housing portion comprises twist biasing means to bias the lower housing portion into the preferential alignment with the upper housing position when the lid is open or closed, further wherein the upper housing portion and lower housing portion are twistable from the preferential alignment to a position of misalignment to disengage the first and second biasing means from one another and enable the lid to open.

16. The compact of claim 15 wherein the lid hinge is secured to the upper housing portion such that the lid and upper housing portion move together when twisted relative to the lower housing portion.

17. The compact of claim 15 wherein the lid hinge comprises lid biasing means for biasing the lid in an open position.

18. The compact of claim 15 wherein the lower housing portion comprises urging means to urge the lid open in response to twisting the upper housing portion and lid relative to the lower housing portion the position of misalignment that disengages the first and second biasing means from one another.

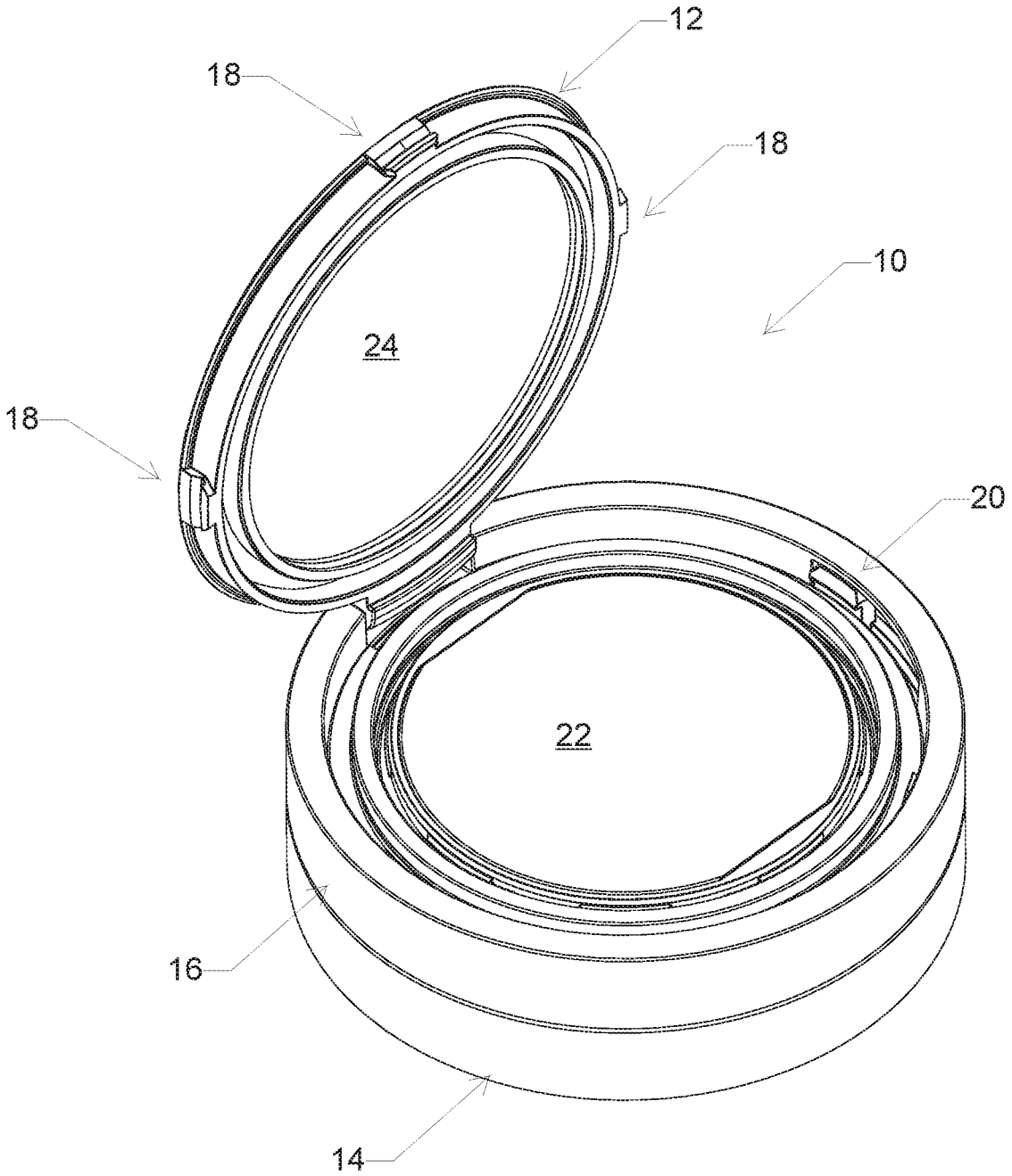


Figure 1

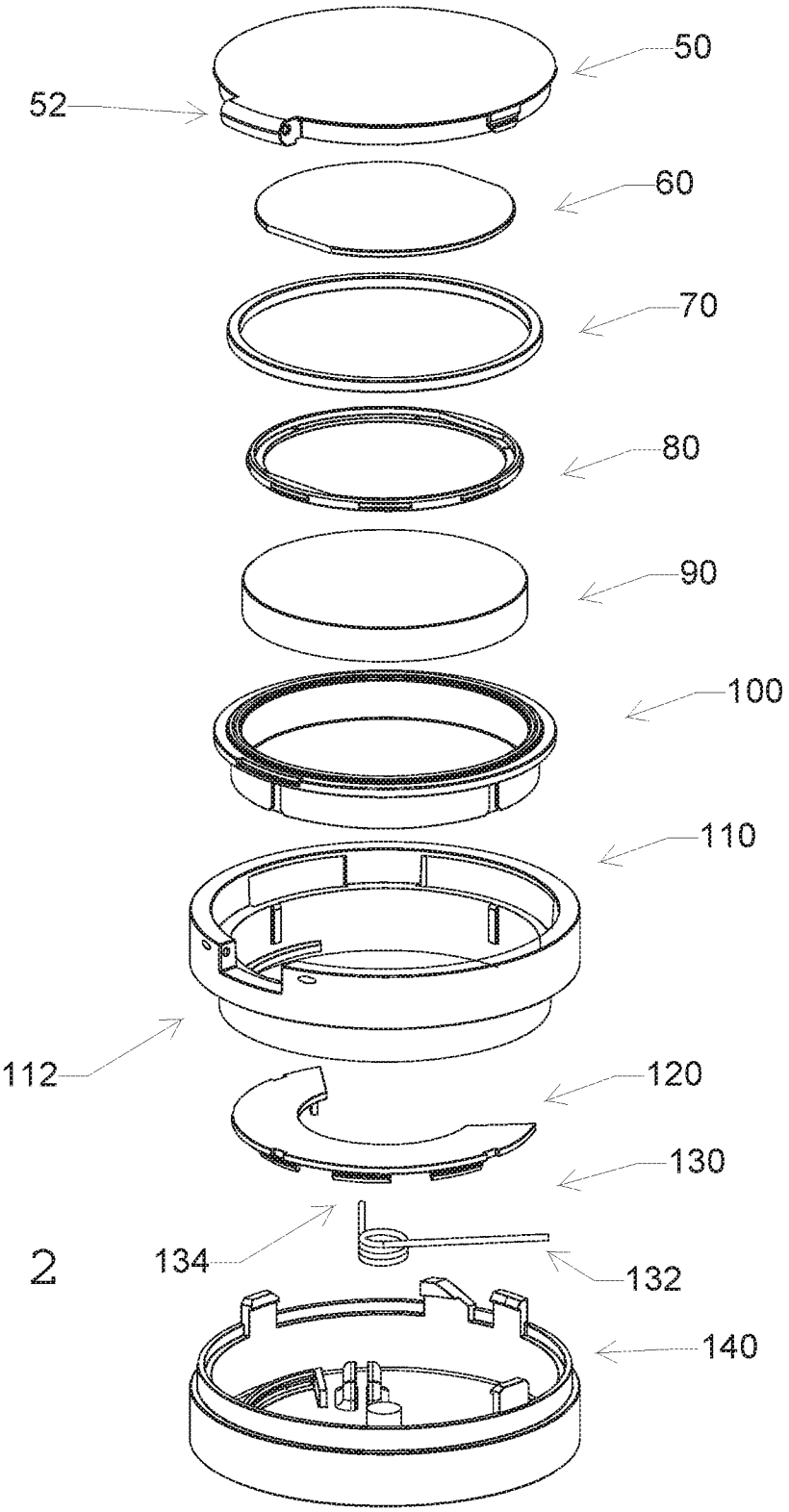


Figure 2

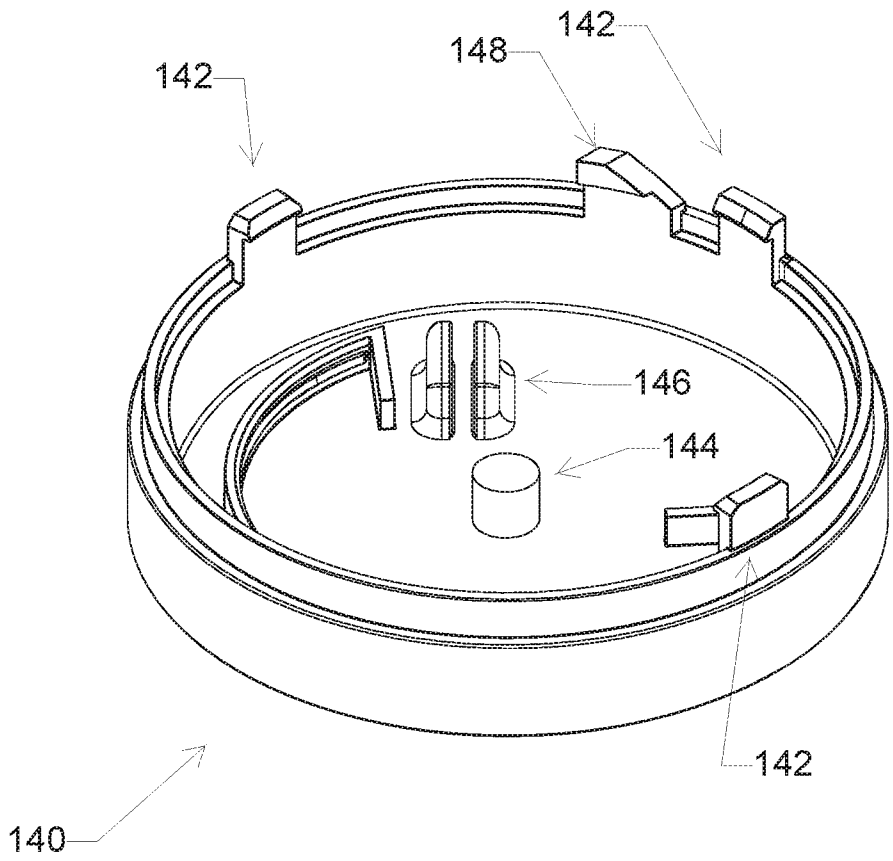


Figure 3

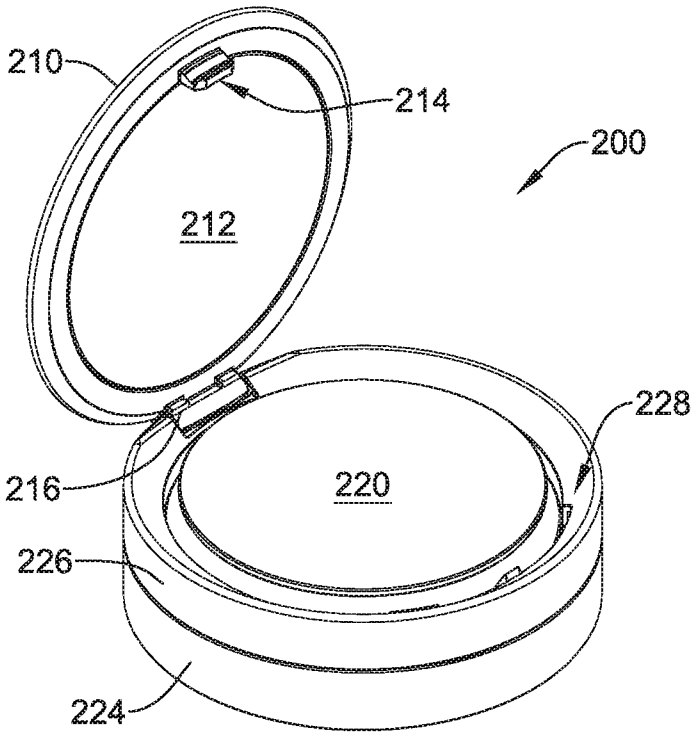


Figure 4

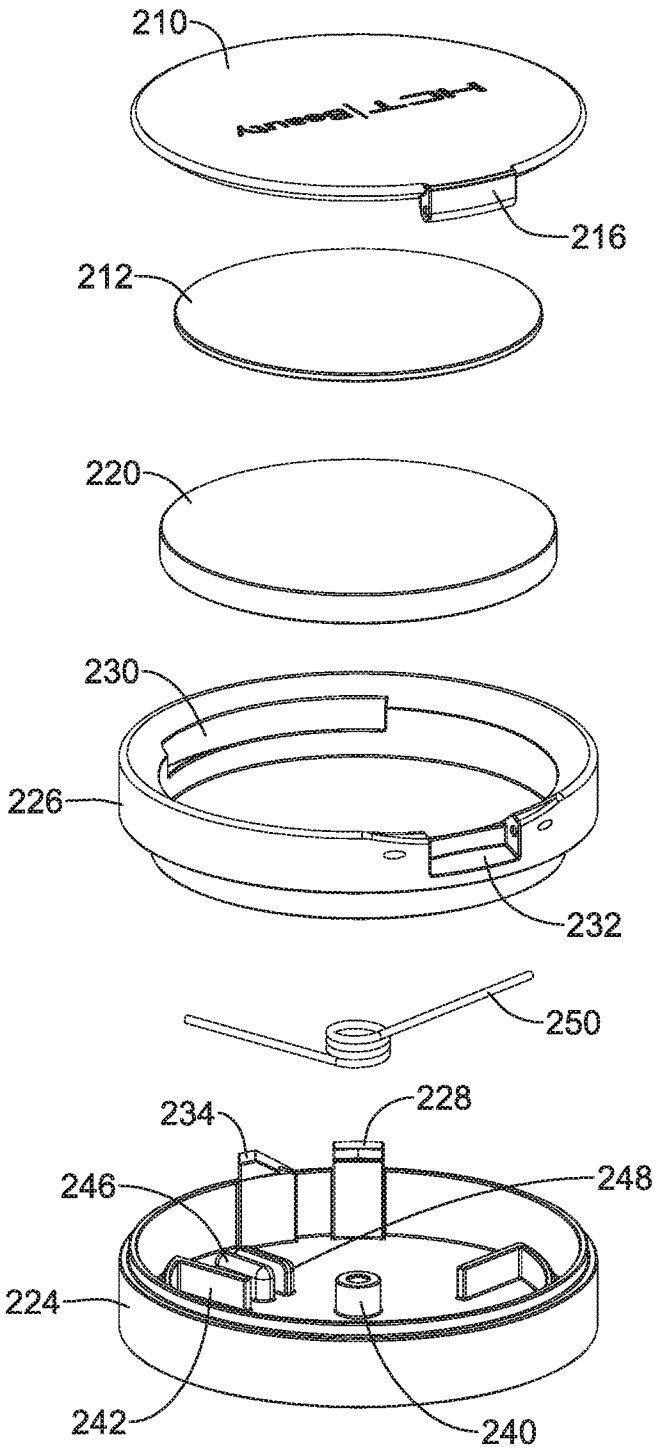


Figure 5

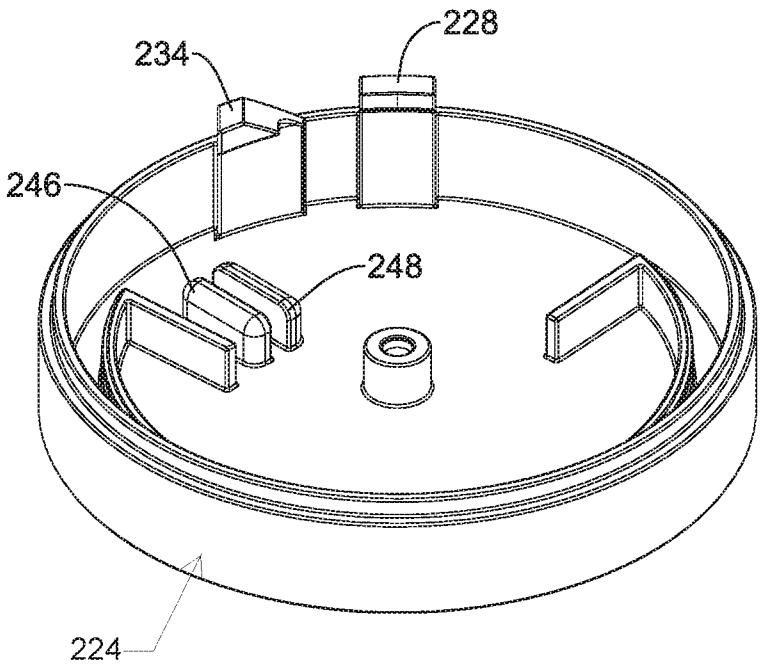


Figure 6

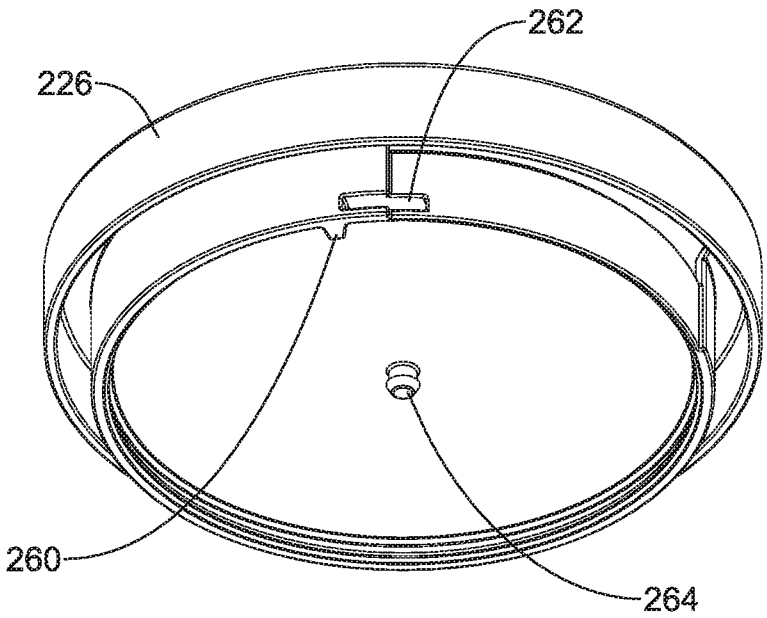


Figure 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/041647

A. CLASSIFICATION OF SUBJECT MATTER

A45D 33/00(2006.01)I, A45D 40/22(2006.01)I, A45D 40/18(2006.01)I, B65D 43/16(2006.01)I, B65D 43/22(2006.01)I, B65D 21/02(2006.01)I, B65D 53/02(2006.01)I, B65D 51/24(2006.01)I

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)
A45D 33/00; A45D 40/22; B65D 53/00; A45D 33/16; A45D 33/24; A45D 40/18; B65D 43/16; B65D 43/22; B65D 21/02; B65D 53/02; B65D 51/24

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: compact, case, lid, twisting, spin, turn, hinge

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2012-0305442 A1 (APODACA, A. C. et al.) 06 December 2012 See abstract; figures 1-6; claims 1-18.	1-18
A	US 2014-0014659 A1 (HTC ASIA LTD.) 16 January 2014 See abstract; figures 1-5; claims 1-16.	1-18
A	KR 10-2013-0083521 A (YONWOO CO LTD.) 23 July 2013 See abstract; claims 1-11.	1-18
A	KR 10-0913110 B1 (LEE, S. W.) 19 August 2009 See abstract; claims 2-5.	1-18
A	KR 20-0409415 Y1 (YONWOO CO LTD.) 22 February 2006 See abstract; claims 1-3.	1-18

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 September 2016 (12.09.2016)	**12 September 2016 (12.09.2016)**

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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		FR 2959496 B1	01/04/2016
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