US 20140284334A1

(19) **United States**

(12) **Patent Application Publication**

CRAPET et al.

(10) **Pub. No.: US 2014/0284334 A1**

(43) **Pub. Date: Sep. 25, 2014**

(54) **CASE WITH RETRACTABLE CLASP HOOK**

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(21) Appl. No.: **14/224,434**

(22) Filed: **Mar. 25, 2014**

(30) **Foreign Application Priority Data**

Mar. 25, 2013 (FR) 1352671

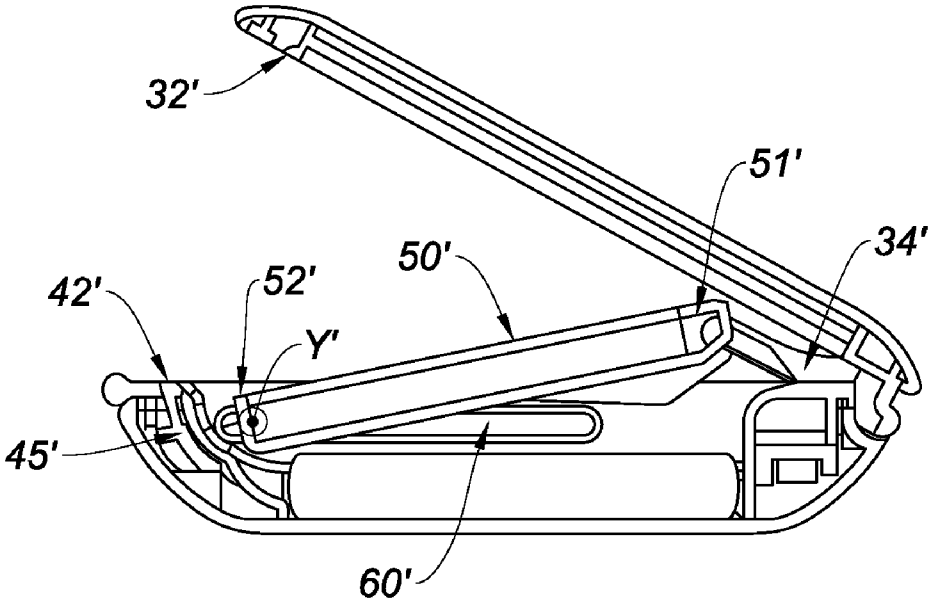
Publication Classification

(51) **Int. Cl.**
A45D 40/22 (2006.01)

(52) **U.S. Cl.**
CPC ***A45D 40/222*** (2013.01)
USPC **220/324**

(57) **ABSTRACT**

A case is provided, notably for cosmetic products. The case includes a base and a lid which are articulated relative to one another. The case includes locking means allowing the lid to be kept in a position in which it is closed onto the base, characterized in that the locking means are articulated relative to the base and/or to the lid in such a way as to be retracted inside the base and/or the lid via the opening of the lid.



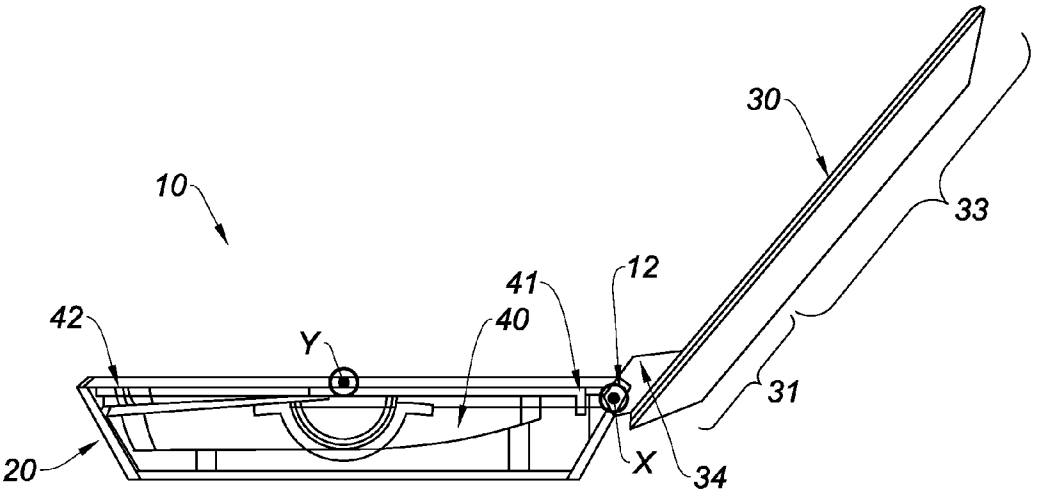


Fig. 1

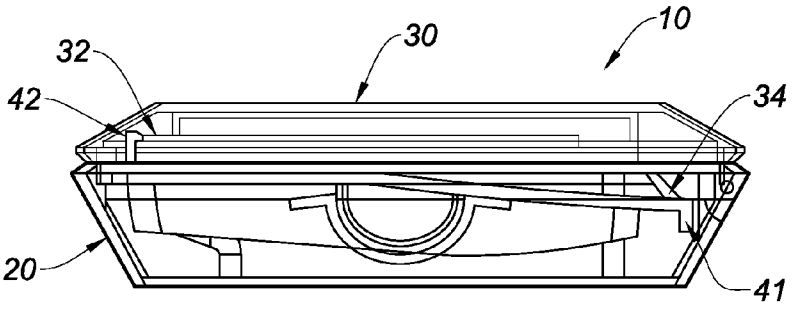


Fig. 2

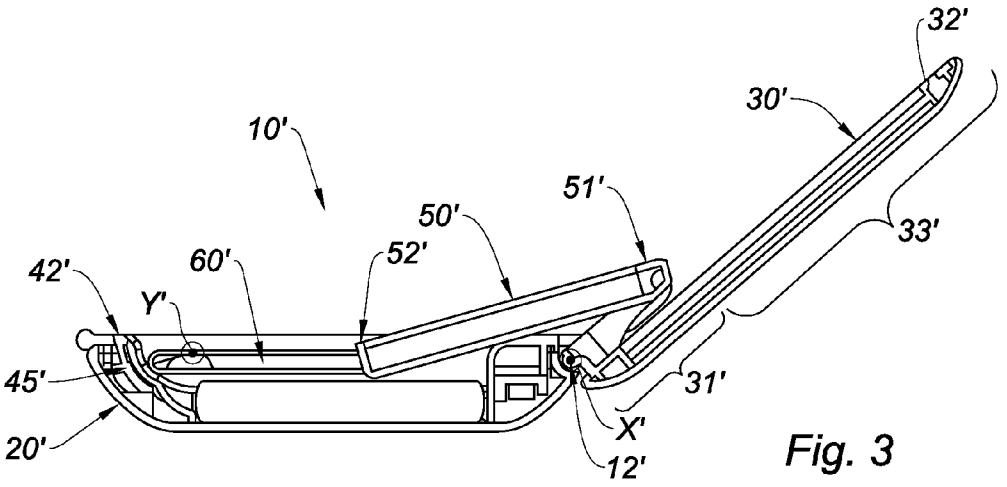


Fig. 3

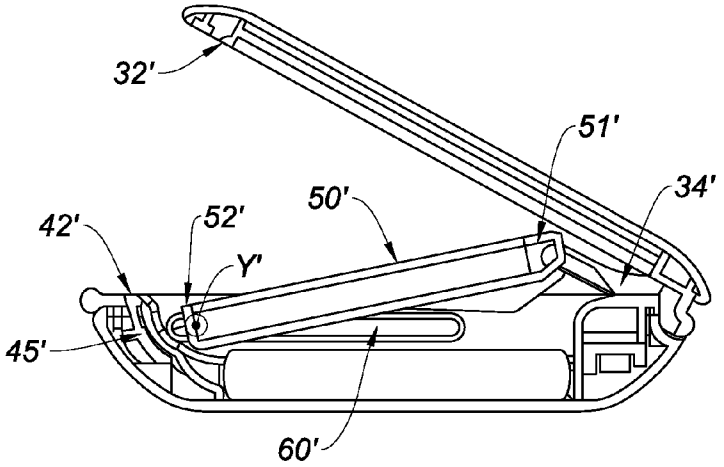


Fig. 4

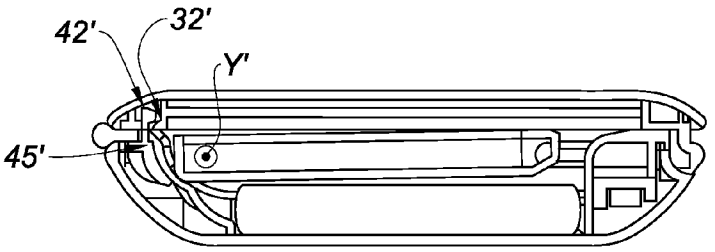


Fig. 5

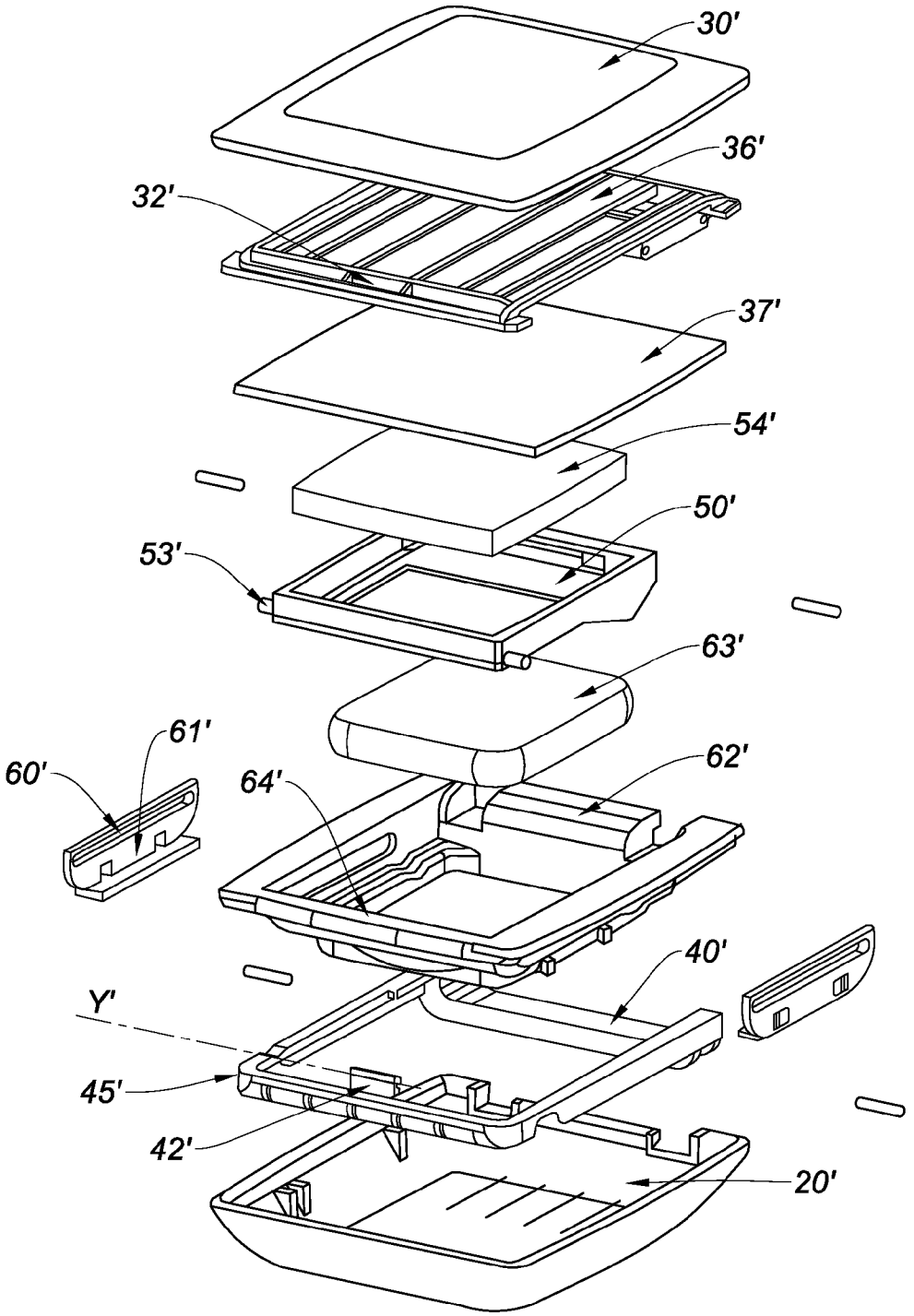


Fig. 6

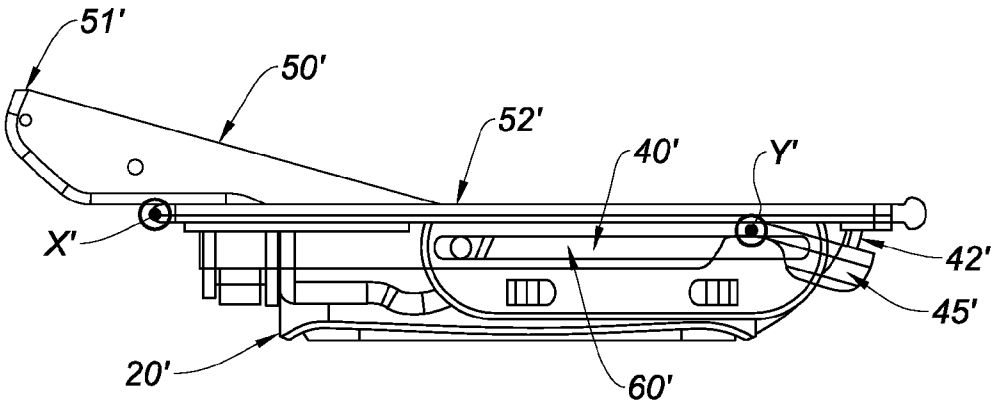


Fig. 7

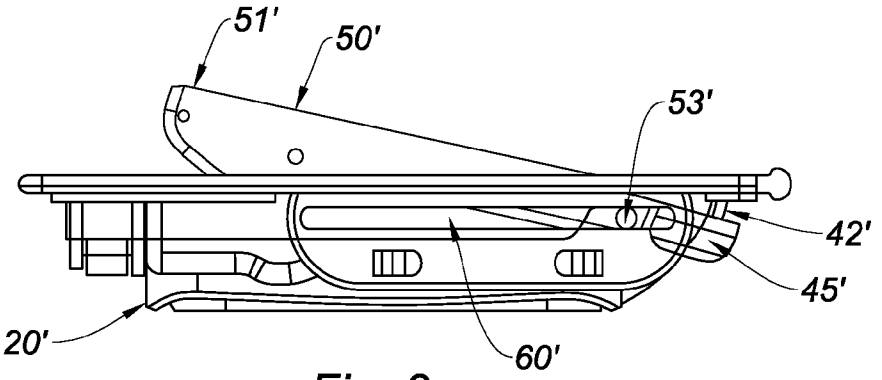


Fig. 8

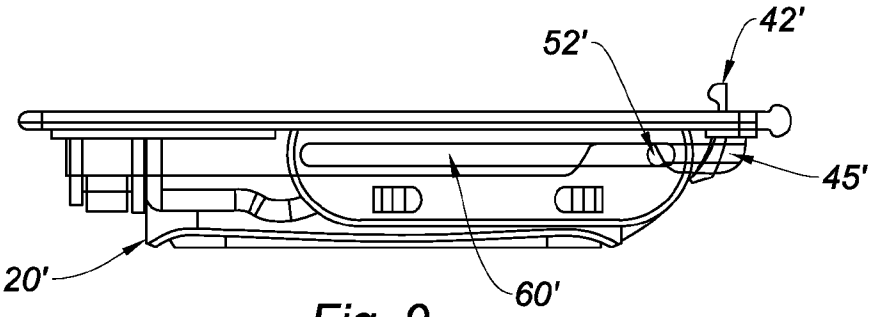


Fig. 9

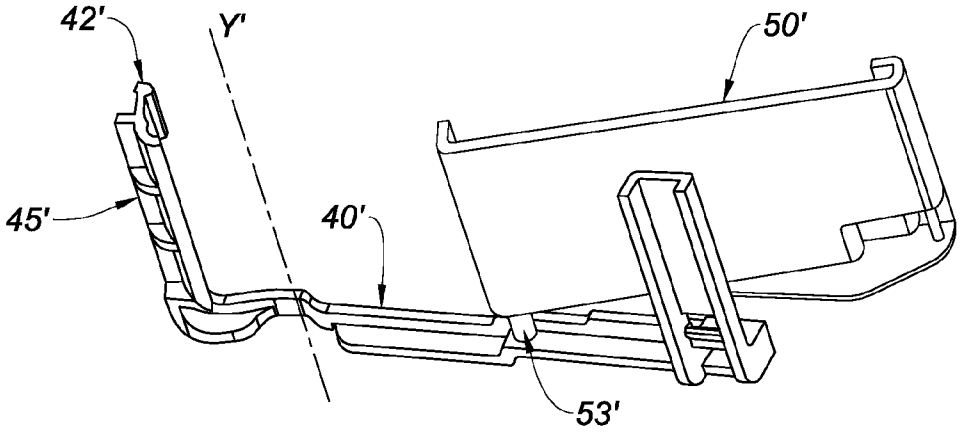


Fig. 10

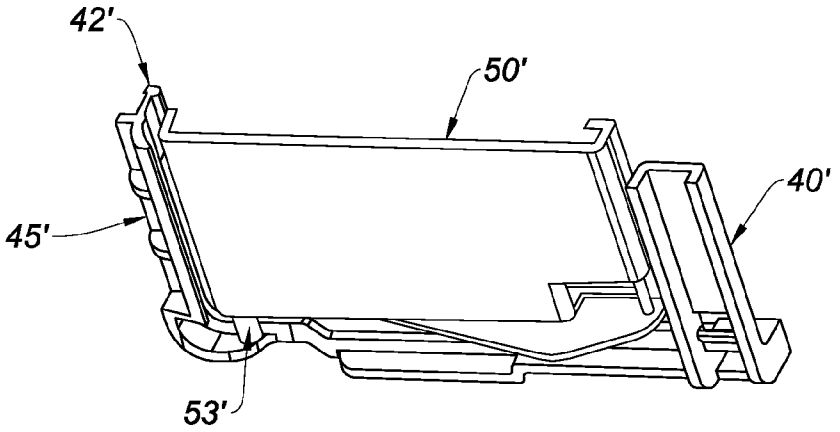


Fig. 11

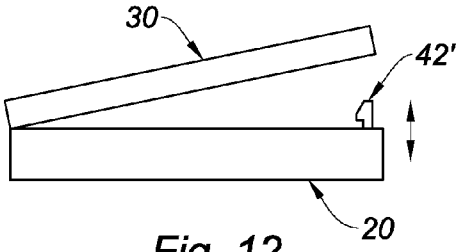


Fig. 12

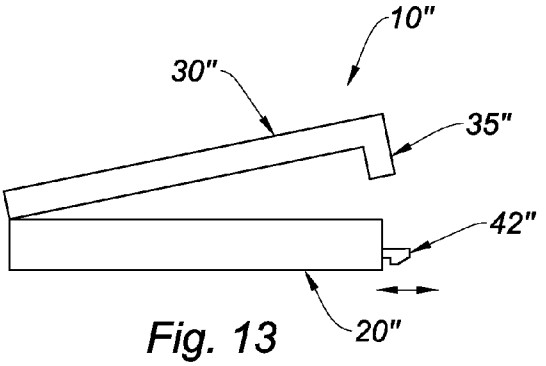


Fig. 13

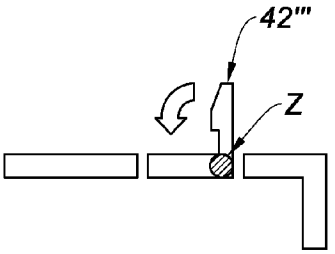


Fig. 14

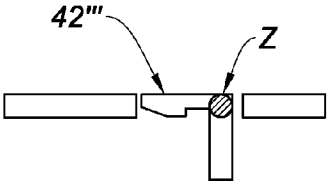


Fig. 15

CASE WITH RETRACTABLE CLASP HOOK

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority under 35 U.S.C. §119(a) to French Patent Application Serial Number 1352671, filed Mar. 25, 2013, entitled "CASE WITH RETRACTABLE CLASP HOOK", the entire teachings of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The invention relates to a case, notably for a cosmetic product.

[0004] 2. Description of the Related Art

[0005] The field of cases for cosmetic products offers varying closure devices, particularly closure devices using clasp hooks. However, the user may be inconvenienced when these hooks are visible by the unpleasant sensation that these hooks have to the touch, on the one hand, and on the other hand, if the user is sensitive to the overall aesthetic of the case.

[0006] There are also closure devices which use magnets. Although magnetic closure devices overcome the disadvantages set out hereinabove, they do have other shortcomings, particularly in terms of cost.

BRIEF SUMMARY OF THE INVENTION

[0007] Embodiments of the present invention address deficiencies of the art in respect to cases for cosmetic products and provide for a novel and non-obvious closure device for a case. In an embodiment of the present invention, a case, notably for a cosmetic product, is provided that includes a base and a lid which are articulated relative to one another, the lid being configured to occupy a position in which it is closed onto the base and a position which is open relative to the base. According to the invention, the case includes locking means articulated relative to the base and/or to the lid in such a way as to be retracted into the base and/or the lid when the lid is in the open position, the lid being configured to actuate the locking means allowing the lid to be kept in the position in which it is closed on the base.

[0008] Thus the invention proposes a closure device that is not visible to the user, particularly when the lid of the case is open, and achieves the same without the use of magnets. The device also has the advantage of being operable through a simple gesture because the user need not retract the closure means after having opened the lid of the case; that takes place automatically as a result of merely opening the lid. It also has the advantage of remaining economical by using one of the actual components of the case, namely the lid, to operate the locking means.

[0009] According to various embodiments of the invention which may be considered together or separately:

[0010] the lid and the base are articulated in rotation about an axis of articulation, notably a hinge,

[0011] the locking means and the base are articulated in rotation about an axis of articulation,

[0012] the axis of articulation of the locking means is parallel to the axis of articulation of the lid,

[0013] the locking means are situated on the opposite side to the axis of articulation of the lid, of the axis of articulation of the locking means,

[0014] the axis of articulation of the locking means is midway between the hinge and the locking means,

[0015] the axis of articulation of the lid is situated near a tangent to the periphery of the case,

[0016] the case comprises a kinematic linkage provided with at least one intermediate component provided with the locking means, the lid being configured to act on the kinematic linkage,

[0017] at least part of the intermediate component is articulated about the axis of articulation of the locking means,

[0018] the lid comprises a skeleton and an articulation part deriving from the skeleton, the articulation part forming the hinge and comprising mechanical means able to convert the opening of the lid into a movement of the kinematic linkage,

[0019] the mechanical means comprise a protrusion, preferably formed at one with the lid,

[0020] the protrusion is able to cause the intermediate component to pivot inside the base,

[0021] the intermediate component is a rocker,

[0022] the protrusion is able to press against a first end of the rocker, the first end being situated near the hinge,

[0023] the protrusion is configured to press on the first end so as to keep the opposite end of the rocker in a raised position,

[0024] retraction of the rocking means with respect to the base occurs under the effect of gravity,

[0025] retraction of the locking means with respect to the base is forced by an elastic element such as a spring,

[0026] the case comprises a tray able to slide with respect to the base, the tray being configured to move relative to the base when the lid is rotated, the tray comprising a first end provided with means of connection to the lid, particularly the protrusion, and a second end provided with cams able to cause the articulated part of the intermediate component to tilt, the articulated part comprising the locking means,

[0027] only the articulated part of the intermediate component is able to pivot inside the base, the remaining part of the intermediate component being fed into the base,

[0028] the cams are able to cause the elastic deformation of the articulated part of the intermediate component,

[0029] the cams are lateral protrusions, preferably formed as one with the tray, the protrusions being able to slide in guide means situated in the base,

[0030] the intermediate component is configured to be housed in the base,

[0031] the locking means take the form of one or more clasp hooks able to collaborate with one or more corresponding mating shape(s) situated inside the lid.

[0032] Finally, the case may have an exterior shape that is parallelepipedal, substantially rectangular, or even of circular, hexagonal, triangular cross section or any other shape that is conceivable for such a case.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0033] The invention will be better understood and other objects, details, features and advantages therefore will become clearly apparent during the course of the detailed explanatory description which will follow, of at least one

embodiment of the invention given by way of purely illustrative and non-limiting examples with reference to the attached schematic drawings.

[0034] FIG. **1** shows, in a side view, a first embodiment of a case according to the invention, some of the components being visible as hidden detail, the lid of the case being in the open position and the locking means being retracted,

[0035] FIG. **2** shows the case of FIG. **1**, with the lid of the case held in the closed position by the locking means,

[0036] FIG. **3** shows, in a transverse plane of section, a second embodiment of a case according to the invention, the lid of the case being in the open position and the locking means being retracted,

[0037] FIG. **4** shows the case of FIG. **3**, with the lid of the case in an intermediate position and the locking means still retracted,

[0038] FIG. **5** shows the case of FIGS. **3** and **4**, the lid of the case being held in the closed position by the locking means,

[0039] FIG. **6** is an exploded view of the case according to the second embodiment,

[0040] FIG. **7** is a detailed view of the case according to the second embodiment of the invention; the view depicting, in side view, the base, the sliding tray and the intermediate component when the lid is in the open position,

[0041] FIG. **8** shows the view of FIG. **7** when the lid of the case is in an intermediate position, and the locking means are still retracted,

[0042] FIG. **9** shows the view of FIG. **7** when the lid of the case is held in the closed position by the locking means,

[0043] FIG. **10** shows, in perspective and in a transverse plane of section, the sliding tray and the intermediate component according to the second embodiment, when the lid of the case is in the open position,

[0044] FIG. **11** shows the view of FIG. **10** when the lid of the case is in the closed position,

[0045] FIG. **12** schematically shows the retraction of the locking means according to a third embodiment,

[0046] FIG. **13** schematically shows a principle of the retraction of the locking means according to a fourth embodiment,

[0047] FIGS. **14** and **15** schematically show a principle of the retraction of the locking means according to a fifth embodiment.

DETAILED DESCRIPTION OF THE INVENTION

[0048] As illustrated, the invention relates to a case **10**, **10'**, notably for a cosmetic product, comprising a base **20**, **20'** and a lid **30**, **30'** which are articulated relative to one another. The base **20**, **20'** and the lid **30**, **30'** are advantageously articulated, in rotation, about a hinge **12**, **12'**. The axis of articulation X, X' about which the rotation occurs here lies near the periphery of the case **10**, **10'**; the axis X, X' is visible in FIGS. **1** and **3**.

[0049] The case **10**, **10'** further comprises locking means allowing the lid **30**, **30'** to be held in a position in which it is closed onto the base **20**, **20'**. According to the invention, the locking means **42**, **42'** are articulated relative to the base **20**, **20'**, in this instance about an axis of articulation Y, Y', so that they can be retracted inside the base **20**, **20'** by the opening of the lid **30**, **30'**. The axis Y, Y' is visible in FIGS. **1**, **6**, **7** and **10**. This axis of articulation Y, Y' is parallel to the axis of articulation X, X' about which the lid **30**, **30'** is able to rotate relative to the base **20**, **20'**. The locking means **42**, **42'** are situated on the opposite side of the axis of articulation Y, Y' to the axis of articulation X, X'.

[0050] It is also possible for the locking means **42**, **42'** to be situated on lateral sides of the case, for example to collaborate with lateral edges of the lid.

[0051] The locking means take, for example, the form of at least one clasp hook **42**, **42'** able to collaborate with at least one mating shape **32**, **32'** situated inside the lid **30**, **30'**. The locking means can also take the form of two clasp hooks **42**, **42'** able to collaborate with two mating shapes **32**, **32'** situated inside the lid.

[0052] The shape given to the clasp hook **42**, **42'** as to the mating shape **32**, **32'** in the figures is nonlimiting. It is in fact conceivable to provide any other shape of clasp hook **42**, **42'** which performs the function of keeping the lid **30**, **30'** in the position in which it is closed down onto the base **20**, **20'**.

[0053] Furthermore, the case **10**, **10'** comprises a kinematic linkage provided with an intermediate component **40**, **40'**. The clasp hook or hooks **42**, **42'** belong to this intermediate component **40**, **40'**.

[0054] The remainder of this description will be devoted to explaining the way in which the lid **30**, **30'** acts on the intermediate component **40**, **40'** in order to cause the clasp hook or hooks **42**, **42'** to retract into the base **20**, **20'** as the lid **30**, **30'** is opened.

[0055] In FIGS. **1** and **2**, the lid acts directly on the intermediate component **40** which bears the axis of articulation Y, here situated midway between the hinge **12** and the locking means **32**, **42**.

[0056] It is also conceivable for the axis of articulation Y to be positioned anywhere between the hinge **12** and the locking means **32**, **42**.

[0057] The lid **30** is in two parts, a first part **31** referred to as the articulation part, and a second part **33** referred to as the skeleton of the lid. The articulation part **31** is derived from the skeleton **33** of the lid and collaborates with the hinge **12** about which the base **20** and the lid **30** are articulated in rotation.

[0058] The articulation part **31** has a protrusion **34**, preferably formed as one with the lid **30**, more particularly with the skeleton **33**. This protrusion **34** allows the intermediate component **40** to tilt about the axis of articulation Y. For this, the protrusion **34** butts against the end **41** of the intermediate component **40** situated near it; this causes the intermediate component **40** to tilt with respect to the axis of articulation Y. Remember that the clasp hook or hooks **42** are situated on the opposite side of the axis of articulation Y to the end **41**.

[0059] Thus, as can be seen in FIG. **2**, once the lid **30** is closed, the protrusion **34** keeps the intermediate component **40** tilted and the clasp hook or hooks **42** in the raised position. The clasp hook or hooks **42** kept in the raised position collaborate with the mating shape or shapes **32** here produced in the skeleton **33** of the lid **30** so as to keep the lid **30** in the position in which it is closed onto the base **20**.

[0060] The protrusion **34** therefore acts as a mechanical means capable of converting the opening and closing of the lid **30** into a tilting of the intermediate component **40**; the intermediate component **40** is therefore a rocker.

[0061] The intermediate component **40** has, for example, an annular shape, corresponding to the periphery of the base **20**. The case **10** may furthermore comprise a receptacle, possibly compartmentalized, to hold the product or products contained in the case **10**. The receptacle is situated in the base **20**. The intermediate component **40** is situated between the receptacle and the base **20**.

[0062] FIGS. **3** to **11** illustrate a second embodiment of the invention.

[0063] This embodiment has a case **10'** comprising a tray **50'** which can slide relative to the base **20'**. The tray **50'** is configured to move relative to the base **20'** when the lid **30'** is rotated. The tray **50'** comprises a first end **51'** connected to the lid **30'**, particularly to the articulation part **31'** of the lid **30'**.

[0064] The lid **30'** indeed has two parts here also, a first part **31'** referred to as the articulation part, and a second part **33'** referred to as the skeleton of the lid **30'**. As in the previous embodiment, the articulation part **31'** may be derived from the skeleton **33'** and collaborate with the hinge **12'** about which the base **20'** and the lid **30'** are articulated in rotation.

[0065] As is more visible in FIG. **4**, the articulation part **31'** comprises an arm **34'** formed as one with the skeleton **33'**. This arm **34'** follows the movement of the lid **30'**. It is articulated in rotation with the tray **50'** and it is precisely this arm **34'** which operates the sliding.

[0066] Furthermore, the tray **50'** is provided with cams **53'** at the opposite end **52'**. These cams **53'**, particularly visible in FIGS. **6**, **8**, **10** and **11**, slide in guide rails **60'** set into the base **20'**. The cams **53'** are lateral protrusions, preferably formed as one with the tray **50'** from the same material. The material will preferably be from the plastics family, and could be acrylonitrile butadiene styrene (ABS) for example.

[0067] The exploded view of FIG. **6** is useful in illustrating this second embodiment. It shows, amongst other things, that the lid **30'** may comprise a component **36'** forming the skeleton. The mating shape or shapes **32'** will be made in this component **36'**. Furthermore, this component **36'** has two opposite faces, one for the attachment of an accessory such as a mirror body **37'**, and the other for the external trim of the lid.

[0068] It can also been seen, from FIG. **6**, that the tray **50'** may comprise a receptacle **54'**, possibly compartmentalized, to hold at least some of the products contained in the case **10'**.

[0069] In this embodiment, the base **20'** may comprise an internal surrounding trim **62'** that fits into it.

[0070] Furthermore, the intermediate component **40'** will here be situated between the surrounding trim **62'** and the base **20'**. The intermediate component **40'** will, for example, have an annular shape as in the first embodiment. This annular shape corresponds to the periphery of the base **20'** and there is all around the surrounding trim **62'**. The intermediate component **40'** will further have an articulated part **45'** around the axis of articulation Y'; the articulated part **45'** comprising the clasp hook or hooks **42'**.

[0071] Only the articulated part **45'** of the intermediate component **40'** will be able to pivot inside the base **20'**, the remaining part of the intermediate component **40'** having no degree of freedom in relation to the base **20'**.

[0072] It is advantageous to note that the insetting of the remaining part into the base **20'** is not necessarily permanent.

[0073] The surrounding trim **62'** visible in this exploded view hides the intermediate component **40'** from the user. It should be noted that one or more slots **64'** are made in the surface of the surrounding trim to allow the passage of the clasp hook or hooks **42'**. The surrounding trim **62'** may form a receptacle in its middle. This receptacle may hold some of the products contained in the case **10'**, for example a sponge **63'**.

[0074] Also visible in FIG. **6** are guide rails **61'** which will be fixed inside the base **20'**. The guide rails here have the guide rails **60'** in which the cams **53'** will slide. The use of guide rails **61'** improves the sliding of the cams **53'** in the rails **60'** by better control of clearances and reduces parasitic noise. These guide rails will preferably be made of plastic, for example based on polyoxymethylene (POM).

[0075] FIGS. **7** to **9** illustrate the sliding of these cams **53'** in the guide rails **60'**.

[0076] FIGS. **3** and **7** both show the case **10'** in the open position. In this position, the clasp hook or hooks **42'** are in the lowered position. The tray is in a position that allows access to the receptacle formed by the surrounding trim **62'**. As may be seen from FIG. **10**, the cams **53'** do not interfere with the articulated part **45'** of the intermediate component **40'** which is intended to be at rest in the lowered position.

[0077] FIGS. **4** and **8** illustrate the case **10'** when the lid **30'** is in an intermediate position, neither open nor closed. The arm **34'** belonging to the articulation part **31'** of the lid **30'** causes the tray **50'** to which it is articulated to move. This tray slides in the guide rails **60'** via the cams **53'** situated at the opposite end **52'** to the end via which the tray **50'** is driven. The objective is to get the tray **50'** to become lodged into the base **20'** over the receptacle formed by the surrounding trim **62'**, while bringing the clasp hook or hooks **42'** to the raised position.

[0078] As illustrated in FIG. **11**, this objective is achieved when the cams **53'**, by beginning to interfere with the articulated part **45'** of the intermediate component **40'**, cause said articulated part to rise until the clasp hook or hooks **42'** are positioned in the raised position. What happens is that the intermediate component **40'** is articulated relative to the base **20'** about the axis Y' visible in FIG. **10**. This raising movement can be achieved through elastic deformation of the articulated part **45'** of the intermediate component **40'**.

[0079] FIGS. **5** and **9** illustrate the case **10'** when the lid **30'** is in the closed position. The cams **53'** have come into abutment in the guide rails **60'**. It will be noted here that the part **45'** provided with the clasp hook or hooks **42'** pivots relative to the base **20'** whereas the part of the intermediate component **40'** that is on the opposite side of the axis Y' to the part provided with the clasp hook or hooks **42'** remains immobile because it is set into the base **12'**.

[0080] When the clasp hook or hooks **42'** are in the raised position, the lid **30'** is in the closed position and the clasp hook or hooks **42'** collaborate with the mating shape or shapes provided in the skeleton **33'** of the lid **30'** in order to keep the lid **30'** in the position in which it is closed onto the base **20'**.

[0081] The invention is not restricted to the embodiments that have just been described.

[0082] Although not indicated in the figures, the rising movement of the clasp hook or hooks **42**, **42'** is preferably initiated when the angle between the lid **30**, **30'** and the base **20**, **20'** goes past 30 degrees on its way towards 0 degrees. Furthermore, the clasp hook or hooks retract when the angle between the lid **30**, **30'** and the base **20**, **20'** goes past 30 degrees on its way towards 180 degrees.

[0083] It would have been appreciated that in the first embodiment, retraction of the clasp hook or hooks **42**, **42'** into the base **20**, **20'** takes place under the effect of gravity. This retraction may also be forced by a spring of the return spring type; it being possible for the spring to be situated, for example, between the base **20**, **20'** and the intermediate component **40**, **40'**. That being the case, such features could also be used, amongst others, with the second embodiment.

[0084] It should be noted that alternative forms of embodiment are of course possible. In particular, it is also conceivable, in a third, fourth and fifth embodiment, for the clasp

hook to be retracted into the base **20** of the case **10** in a different way than the way described hereinabove.

[0085] FIG. **12** illustrates the retraction of a clasp hook **42'** in a translational movement rather than a tilting movement. This depiction is schematic.

[0086] FIG. **13** illustrates a fourth embodiment in which retraction of the clasp hook **42"** is intended to be from the front face of the base **20**. The clasp hook **42"** is no longer retracted into the base **20"** through a downwards movement but through a lateral movement.

[0087] As a result, the lid **30"** has a return **35"** into which the clasp hook **42"** engages in order to keep the case **10"** closed.

[0088] A fifth embodiment is also conceivable. The fifth embodiment is illustrated in FIGS. **14** and **15**. In the three embodiments described hereinabove, the hook **42**, **42'**, **42"** is retracted into the base **20**, **20'**, **20"** by a downwards movement or even via a lateral movement. In this fifth embodiment, the hook **42"'** is retracted by rotation about an axis Z; the axis is visible in FIGS. **14** and **15**.

[0089] It is entirely possible to combine the embodiments set out hereinabove in order to optimize the expected result.

[0090] It is also possible to provide for the locking means to be articulated relative to the lid. The latter is then configured so that the locking means are retracted into the lid as it opens.

[0091] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0092] The corresponding structures, materials, acts, and equivalents of all means plus function elements in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed. The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the invention. The embodiments were chosen and described in order to best explain the principles of the invention and the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

[0093] Having thus described the invention of the present application in detail and by reference to embodiments thereof, it will be apparent that modifications and variations are possible without departing from the scope of the invention defined in the appended claims as follows:

What is claimed is:

1. A case for a cosmetic product, comprising:

a base and a lid which are articulated relative to one another,

the lid being configured to occupy a position in which it is closed onto the base and a position which is open relative to the base,

the case comprising locking means articulated relative to the base, the lid, or the base and the lid in such a way as to be retracted into the base, the lid, or the base and the lid when the lid is in the open position,

the lid being configured to actuate the locking means allowing the lid to be kept in the position in which it is closed on the base.

2. The case according to the claim **1**, wherein the lid and the base are articulated in rotation relative to one another about an axis of articulation, the locking means being situated on an opposite side of the axis of articulation of the lid on an axis of articulation that is parallel to the axis of articulation of the lid.

3. The case according to claim **1**, further comprising a kinematic linkage provided with at least one intermediate component provided with the locking means, the lid being configured to act upon the kinematic linkage.

4. The case according to claim **3**, wherein at least part of the intermediate component is articulated about the axis of articulation of the locking means.

5. The case according to claim **1**, wherein the lid and the base are articulated relative to one another in rotation about a hinge.

6. The case according to claim **5**, wherein the lid comprises a skeleton and an articulation part deriving from the skeleton, the articulation part forming the hinge and comprising mechanical means able to convert the opening of the lid into a movement of the kinematic linkage.

7. The case according to claim **6**, wherein the mechanical means comprises a protrusion adapted to cause the intermediate component to pivot inside the base.

8. The case according to claim **4** wherein the kinematic linkage comprises a tray adapted to slide with respect to the base, the tray being configured to move relative to the base when the lid is rotated, the tray comprising a first end connected to the lid and a second end comprising cams adapted to cause the articulated part of the intermediate component to tilt, the articulated part comprising the locking means.

9. The case according to claim **8**, wherein only the articulated part of the intermediate component is able to pivot inside the base, the remaining part of the intermediate component being fed into the base.

10. The case according to claim **8**, wherein the cams are adapted to cause the elastic deformation of the articulated part of the intermediate component.

11. The case according to claim **8**, wherein the cams are lateral protrusions configured to slide into a guide disposed within the base.

12. The case according to claim **3**, wherein the intermediate component is housed in the base.

13. The case according to claim **1**, wherein the locking means comprises at least one clasp hook adapted to collaborate with at least one mating shape situated inside the lid.

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