In accordance with the present invention, there is provided a package (1) having a front (2) and a back (3) portions and two sides. The package has a closed position and an open position. The package includes a cover (10) having a top wall (11), and a base (20) having a bottom wall and a peripheral wall surrounding and attached to the bottom wall. The peripheral wall abuts against the cover when the package is in its closed position so as to define an interior. The cover and the base are joined together along the back by a hinge (50). The package includes at least one latch (40) for maintaining the package in its closed position. The package also has two latch releases (150, 250), one located on each side for opening the package. The latch releases extend outwardly beyond the cover of the package. Lastly, the package includes a device (132) for automatically pivoting said cover to an angle greater than 90°, with respect to the base, when the latch is released.
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AN EASY TO USE ONE HANDED SELF-OPENING HINGED PACKAGE

FIELD OF THE INVENTION

The present invention relates to self-opening hinged packages. The present invention has further relation to such packages which can easily be opened with one hand.

BACKGROUND OF THE INVENTION

Packages, such as cosmetic compacts, having a base and a cover hinged together along their back portions have been available for years. Typically a closure or latching device is provided in the front portion of the package. In order to keep the cost of the compacts low, most mass marketed compacts are opened by simply prying the cover from the base thus overcoming the latching device engagement. A common complaint associated with these compacts is high frequency of broken finger nails. To overcome this problem, more expensive compacts may include a push button which assists in opening the latching device. For example, U.S. Patent 5,050,623 issued to Yuhara et al. on September 24, 1991 discloses a separate push button attached to the cover which operates against a ramped surface on the base to aid in overcoming the latching device.

In order to facilitate one handed opening, Yuhara also discloses a similar compact but includes two push buttons located on the sides of the compact. This design makes it easier for the user to hold the compact in the palm of their hand and press the side buttons with their thumb and fore finger. However, there are still some drawbacks to this design. Because the side buttons are flush with the container and the cover and base edges are flush with each other, the users thumb and fore finger will often contact the cover and the base simultaneously. Thereafter, when the buttons are pressed the thumb and finger will interfere with the opening of the package. Furthermore, the cover will not open to an angle greater than 90° so that the other hand would still be needed to pivot the cover to an angle where the user can see the mirror on the interior of the cover.
Accordingly, there has been a desire to provide a package, such as cosmetic case, having a dual side latch releases wherein the user’s fingers will not interfere with the opening and wherein the cover will automatically pivot to an angle greater than 90° when the latch is released.

There has been a further desire to provide such a package wherein the package will not open unless both latch releases are operated. There has been an even further desire to provide such a package which is inexpensive to manufacture.

SUMMARY OF THE INVENTION

In accordance with the present invention there is provided a package having a front and a back portions and two sides. The package has a closed position and an open position. The package includes a cover having a top wall, and a base having a bottom wall and a peripheral wall surrounding and attached to the bottom wall. The peripheral wall abuts against the cover when the package is in its closed position so as define an interior. The cover and the base are joined together along the back by a hinge. The package includes at least one latch for maintaining the package in its closed position. The package also has two latch releases, one located on each side for opening the package. The latch releases extend outwardly from the peripheral wall beyond the base. Lastly, the package includes a device for automatically pivoting said the to an angle greater than 90°, with respect to the base, when the latch is released.

In accordance with another aspect of the present invention there is provided such a package, as described above, wherein the package opens only of both latch releases are operated.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the subject invention, it is believed the same will be better understood from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 is a a perspective view of package, made in accordance with the present invention, shown in its open position.

Figure 2 is a perspective view of a package made in accordance with the present invention showing the package in its open position.

Figure 3 is a simplified cross-sectional view of Figure 1, taken perpendicular to line 4-4 showing a latch release 150.

Figure 4 is a simplified cross-sectional view of package 1 taken along line 4-
4 in Figure 1 showing the back 3.

Figure 5 is a view similar to that of Figure 4 but showing the package in its open position.

Figure 6 is a cross-sectional view of the back of an alternative embodiment of a package of the present invention, showing the hinge.

Figure 7 is a view similar to Figure 6 but showing yet another alternative embodiment of the present invention.

Figure 8 is a perspective view of another alternative embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings in detail wherein like numerals indicate the same element throughout the views there is shown in Figures 1 and 2 a package 1 made in accordance with the present invention. Package 1 has opposing front and back portions 2 and 3, respectively, and opposing side portions 4 and 5. Package 1 includes a cover 10 having a top wall 11. Top wall 11 has surrounding wall 12 having a lower surface 13. Package 1 further includes a base 20 having a bottom wall 21 and a peripheral wall 22 which surrounds and is attached to bottom wall 21. Peripheral wall 22 has an upper surface 23. Package 1 further includes platform 160 having an opening 31 which can receive a cosmetic product. When package 1 is in the closed condition, peripheral wall 22, along upper surface 23, abuts against top wall 11, along lower surface 13. Base 20 and cover 10 are joined together along the back portion 3 by a hinge 50. Base 20 has a channel 24, creating hinge side walls 25 and 26. Hinge arm 70 is inserted into channel 24 and is connected to hinge side walls 25 and 26 by a pin, shown in Figure 5. Base 20 and cover 10 can be made from any number of materials known in the art including ABS (Acrylonitrile butadiene styrene) and SAN (Styrene acrylonitrile).

The package 1 also includes at least one latch 40 for maintaining the package in its closed position as shown in Figure 1. Latch 40 can be of any variety known in the art and be placed various places along the peripheral wall. Figure 2 shows a latch 40 adjacent the front of the package comprising a lower catch 41 extending from the base and an upper catch 42 extending from the cover. The lower catch 41 would have a protrusion 43 extending therefrom which engages a protrusion 44 on the upper catch 42 so as to maintain the package in its closed position. The catches would release their engagement from each other as the cover is pivoted away from the base.

Package 1 also has two latch releases, one on each side 4 and 5. Numerous
latch releases for initially moving the cover away from the base which are known in
the art can be used with the present invention. One such latch release is described
in U.S. Patent 5,050,623 issued to Yuhara et al. on September 24, 1991 which is
hereby incorporated herein by reference. This reference uses a push button which is
operated against a ramped surface to overcome the latch. The advantages of
having a dual side button opening feature for a compact are numerous. Dual side
buttons along with a self-opening feature such as the spring described below, allow
the compact to be opened to a desired angle with the use of only one hand. While
this might be accomplished by using one side button, the dual side buttons make the
compact easier to open for both right and left handed people. Additionally, the
compact is more stable and stays in the users hand better because the opening force
is not directed away from the user's grip. To make opening the package easier the
buttons are preferably relatively large and have some preferred dimensions. The
length of the bottom as measured from points nearest the back of the package to
points nearest on the button nearest the front of the package is preferably from
about 10mm to about 50mm and most preferably from about 20mm to about
40mm. The height of the bottom as measured from points nearest the bottom wall
to points nearest the top wall is preferably about 1mm to about 10mm and most
preferably from about 3mm to about 7mm. The width of the button as measured as
how far the button projects outwardly from the peripheral wall or how far it extends
from out from the cover is preferably from about 1.5mm to about 4mm and
preferably from about 2mm to about 3.5mm. It is preferred that the buttons
protrude outwardly at a point away from the bottom wall of the package so that it
is easier for consumers to open the package with one hand. Typically, the
protrusions should be spaced vertically from the bottom wall, as measured along a
line perpendicular to the plane that the bottom wall lies, from about 2mm to about
4mm away from the bottom wall.

One preferred embodiment of the latch release is shown on package 1 and
comprises two levers 150 and 250, one lever on each side portion 4 and 5
respectively, for biasing the cover away from the base so as to release the latch and
open the package. Both levers are identical so only lever 150 will be described
herein. Peripheral wall 22 and bottom wall 21 are interrupted by slots 158 and 159
so that lever 150 is free to rotate about pivot area 155. A portion of platform 160
is shown cut away to expose the pivot area 155. As seen from Figure 3, lever 150
has a top edge 151, a bottom 152 and an exterior 153 which extends outwardly
from the peripheral wall 22. Lever 150 is integral with the base 20 so that they
can be molded as one piece using any molding techniques known in the art such as
injection molding. Lever 150 is connected to base 20 along its bottom 152 by a pivot area 155. Pivot area 155 is an area of reduced thickness relative to adjoining material such that an area of relative weakness is formed. The top edge 151 is generally in the plane of the upper surface 23 of peripheral wall 22. Accordingly, since no obstructions project above this plane, decoration of this surface by means such as hot stamp transfer are easily accomplished. Furthermore, there are no obstructions interfere with the users access to the contents of the package.

To open package 1, the user of the package would push inwardly on the exterior 153 of lever 150 so that the lever operates as a push button. The force applied to exterior 153 causes lever 150 to rotate about pivot area 155. Rotation of lever 150 causes top edge 151 to generally follow an arc path thereby providing vertical lift of top edge 151 with a corresponding horizontal displacement. The vertical lift of top edge 151 operates against the lower surface 13 of top wall 11 of cover 10. This force biases the cover away from the base so as to release the latch 40. Preferably the vertical and horizontal distance of pivot area 155 from the top edge 151 of lever 150, as is indicated as "Y" and "X" respectively, are equal.

By referring back to Figure 2 one can see that a relief 161 in platform 60 forms clearance 162 to provide for inward rotation on lever 250. Clearance 161 limits the inward travel of lever 250. A similar structure is provided for lever 150. It is preferred that the package will not open unless both levers are pressed inwardly. By limiting the travel of levers 150 and 250, the vertical displacement of either of the levers 150 or 250 is insufficient to disengage latch 40. This is an advantage in preventing accidental opening of the package such as in the user's purse. However, when both levers 150 and 250 are pressed simultaneously, the vertical displacement of cover 110 is sufficient to disengage latch 40.

As seen from Figure 1 it is preferred that levers 150 and 250 extend outwardly from said package so that they are disposed beyond the surrounding wall 12 of cover 10. The embodiment shown in Figure 1 has the levers extending beyond both surrounding wall 12 and peripheral wall 22. However, for other embodiments this is not so. For example, Figure 8 shows a compact 801 having a cover 810 and base 820. As seen from the figure, the base 820 or the peripheral wall 822 extends outwardly beyond the cover 810 so that latch release 851 also extends beyond the cover 810 but can still be flush with peripheral wall 822.

It is also preferred that the package 1 have a means for applying an opening force to the package after the latch is released so that the cover automatically pivots to an angle greater than 90°, with respect to the base. One way this is accomplished is through the use of a spring 132, shown in Figure 4, which operates in conjunction
with hinge 50. Spring 132 has one of its ends 132a attached to the cover and its other end 132b attached to the base 20. After the latch is released the spring biases the cover away from the base and the cover pivots around hinge 50.

Another preferred feature of the present invention is a means for dampening the opening force of the spring, so that cover has a more elegant appearance when it opens. One way of achieving this can best be explained by describing the construction of hinge 50. Hinge 50 is located adjacent the exterior 29 of peripheral wall 20. The hinge includes a hinge arm 70 which extends downwardly from top wall 11 and is preferably integral with cover 10. As stated earlier, hinge arm 70 is connected to the base by a pin 55. This allows the cover 10 and, therefore, the hinge arm to pivot around pin 55 so as to open the package 1. By referring to Figure 5 one can see that hinge arm 70 has an outer surface 71 which makes frictional contact with the base 20. Spring 132 has been removed from Figure 6 for clarity. In Figure 6 outer surface 71 is shown as making frictional contact with the base 20 along contact area 27 which is along the peripheral wall 22 inside channel 24. This frictional contact between the hinge arm 70 and the base 20 dampens the opening force of the cover. This feature also makes the cover adjustable because the frictional contact force is sufficient enough to allow the cover to pivot to a desired angle with respect to the base and remain stationary.

Outer surface 71 of hinge arm 70 has a profiled cam surface 72 so that as the cover begins to open the hinge arm will not have frictional contact with the base 20 until cam surface 72 contacts the peripheral wall 22. After which the cam slows opening rate of the cover, on a self-opening package, and eventually causes the cover to stop pivoting. The frictional contact between the cam and the base allows the cover to be adjusted to different angles. The growth rate of the cam profile is important. If the cam profile growth rate is too little, the cam will be sensitive to manufacturing tolerances, i.e. a small variation in dimension would cause a large opening angle variation. On the other hand, if the growth rate is too large the friction between the cam and the flexible pivot would be too great and the cover may not even be able to pivot. Preferably as the package is initially opened the frictional contact is small or nil until the cover approaches the desired angle at which the cover should stop. Thereafter, the frictional contact should then becomes so great that the cover stops at the desired angle.

In the present invention frictional contact is preferably maintained by providing flexibility between the hinge arm 70 and the contact area 27. This allows for manufacturing tolerances so that when the package is mass manufactured, the desired opening angle, i.e. where the cover stops after the self-opening package is
opened, is consistent from package to package. The amount of flexibility between the hinge arm and the base should be greater than the manufacturing tolerance so as to maintain an acceptable friction range so that the cover will have an adjustable cover and that the desired angle at which the cover stops after the latch is released will be consistent. The flexible contact also prevents the package from being damaged. Different embodiments to achieve this desired flexibility are given below.

In the embodiment of Figure 5 flexibility between the hinge arm and the contact area 27 is accomplished by making the peripheral wall from a suitable flexible material, such as plastic, so that it will bend when the hinge arm makes contact with it along contact area 27. That is as the hinge arm 70 rotates against contact area 27, peripheral wall 22 bends. This is accomplished by manufacturing the peripheral wall from a suitable flexible material many of which are known in the art, such as ABS, SAN polyethylene, polypropylene or any other suitable plastic.

There are many other ways of providing for this flexible contact. For example the peripheral wall along the contact area contact area could have two or more slits to provide flexibility. The slits could extend down onto the bottom wall much in the same way the levers 150 and 250 do on Package 1. With this embodiment the hinge arm could have a cam profile having several steps each growing earlier than the other and each step abutting against one comb, in-between two slits. This causes the hinge arm to generate more and more friction as the cover is opened. This design generates friction gradually and smoothly so as to give a more elegant opening appearance and cover stopping effect.

Other ways of providing a flexible contact between the hinge arm and the contact area include having a contact area made from a resilient or foam like material. Suitable resilient materials include polystyrene foam, rubber or any type of shock absorbing and elastic materials such as a Velcro® or a velvet type material. Or the contact area can be made resilient by having a contact area comprising a rigid surface which is connected to the peripheral wall by a flexible member such as a piece of foam a pair of bending legs.

Another way of providing flexibility between the hinge arm and the contact area is to provide the package with a flexible pin flexible so that as the cover is opened it flexes so as to compensate for manufacturing tolerances and provide the necessary flexible frictional contact. Lastly, the flexibility between the hinge arm and the base can be provided by having a hinge arm made from a flexible material so that it deforms as the cover is opened or have a piece of flexible material attached to the outer surface of the hinge arm such as Velcro® or velvet. As with all of the embodiments it is preferred that the flexibility of the contact between the
hinge arm and the base be greater than the manufacturing tolerance so as to maintain an acceptable friction range under manufacturing conditions.

Another embodiment of a means for dampening the opening force of the spring can best be explained by referring to Figure 6. Figure 6 is a cross-sectional view of the back 603 of a package 601 which is similar in construction to package 1. Package 601 has a hinge 650 comprising hinge arm 670 connected to hinge side walls 625 and 626 by a pin 655. Hinge 650 includes a spring or the like to open the package automatically, however this is not shown so that the dampening means can be explained more clearly. Hinge arm 670 has a cylindrical bore 621 disposed therein which has enlarged section 631. Inside enlarged section 631 is an insert 640 which is connected to pin 655. Between insert 640 and enlarged section 631 is a high viscosity liquid 645 such as a silicone based oil or grease. The viscous nature of liquid 645 dampens the rotation of hinge arm 670 about insert 640 when the compact 601 is opened. While the liquid could be placed between bore 621 and the pin, without the enlarged section and insert, the use of the insert effectively increases the diameter and improves the dampening effect.

Another embodiment of a means for dampening the opening force of the spring, similar to the embodiment described above, can best be explained by referring to Figure 7. Figure 7 is a similar view to that of Figure 6 and is a cross-sectional view of the back 703 of a package 701 which is similar in construction to package 1. Package 701 has a hinge 750 comprising hinge arm 770 connected to hinge side walls 725 and 726 by a pin 755. Hinge 750 includes a spring or the like to open the package automatically, however this is not shown so that the dampening means can be explained more clearly. Hinge arm 770 has a cylindrical bore 721 disposed therein which has enlarged section 731. Inside enlarged section 731 is a small quantity of pressure sensitive hot melt glue 740 between pin 755 and enlarged section 731. The viscous nature of glue 740 dampens the rotation of pin 755 when the compact 701 is opened.

While particular embodiments of the present invention have been illustrated and described herein it will be obvious to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the present invention and it is intended to cover in the appended claims all such modifications that are within the scope of this invention.
WHAT IS CLAIMED IS:

1. A package having front and back portions and two side portions, the package having a closed position and an open position, the package includes a cover having a top wall, and a base having a bottom wall and a peripheral wall surrounding and attached to the bottom wall, the peripheral wall abuts against the cover when the package is in its closed position so as define an interior, the cover and the base are joined together along the back portion by a hinge, the package further including at least one latch for maintaining the package in its closed position, the package characterized by:

   (a) two latch releases, one located on each side of the package for opening the package, the latch releases being so disposed so as to extend outwardly beyond the cover, and

   (c) a means for applying an opening force to the package after the latch is released so that the cover automatically pivots to an angle of greater than 90°, with respect to the base.

2. The package according to Claim 1 wherein the latch releases extend outwardly beyond the cover a distance ranging from about 1.5mm to about 4mm.

3. A package according to any of the previous Claims wherein the latch releases comprise push buttons and have a length, as measured from points on the buttons nearest the back of the package to points on the button nearest the front of the package ranges from about 10mm to about 50mm and wherein the height of the button, as measured from points nearest the bottom wall to points nearest the top wall is preferably about 1mm to about 10mm.

4. A package according to any of the preceding Claims wherein the package opens only of both latch releases are operated.

5. A package according to any the previous Claims further including a means for dampening the opening force applied to the package.
6. The package according to Claim 5 wherein the hinge comprises a downwardly extending hinge arm connected to the cover, the hinge arm is connected to the base by a pin, which allows the hinge arm to pivot around the pin, and wherein the means for automatically pivoting the cover to an angle greater than 90°, with respect to the base, when the latch is released comprises a spring within the hinge, which pivots the cover around the hinge when the latch is released and wherein the means for dampening the opening force comprises the hinge arm having an outer surface which makes frictional contact with the base along a flexible contact area as the hinge arm is pivoted.

7. A package according to any of the preceding Claims wherein the cover stops pivoting at a desired angle, with respect to the base, and can manually pivoted to a greater angle thereafter and remain stationary.

8. The package according to Claim 7 wherein the outer surface of the hinge arm has a profiled outer surface which makes greater frictional contact with the base as the cover is pivoted to greater angles with respect to the base.

9. The package according to Claim 5 wherein the means for dampening the opening force comprises a viscous fluid disposed between the pin and the hinge arm.

10. The package according to Claim 9 wherein the viscous fluid is a hot melt glue.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 6  A45C13/10  A45C13/34

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)

IPC 6  A45C  A45D  E05B  E05D

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

Electronic data base searched during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<td>FR,A,2 684 962 (LIR FRANCE) 18 June 1993 see the whole document</td>
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[Special categories of cited documents:

- A: document defining the general state of the art which is not considered to be of particular relevance
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- P: document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search

3 May 1995

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Sigwart, C

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