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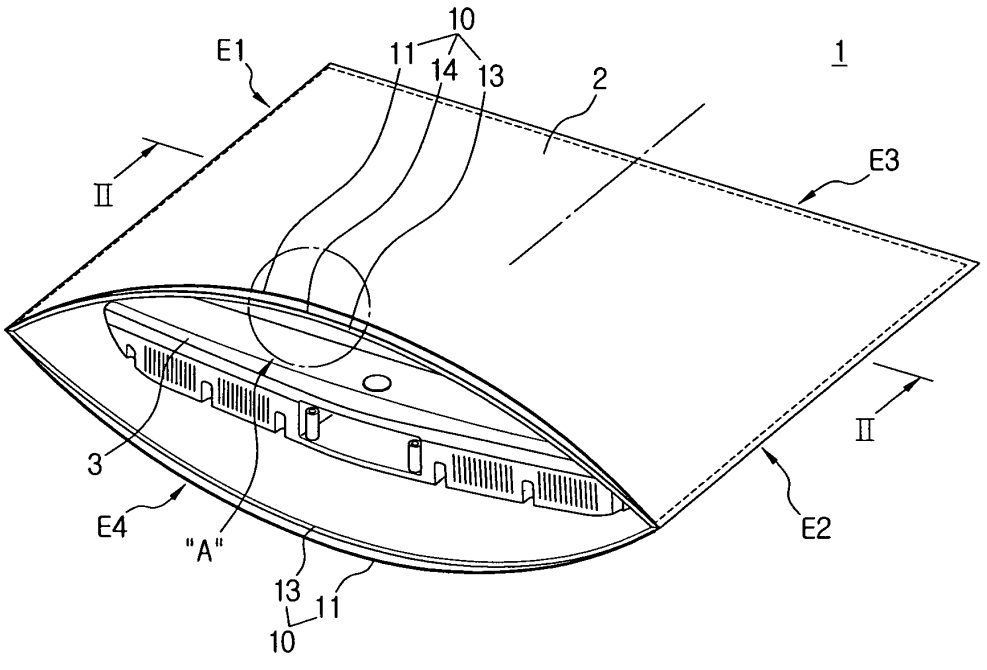
(54) Multi-layered packaging film and packaging bag

(57) A packaging bag (2) includes at least two multi-layered sections (10) adjacent with each other. Each of the at least two multi-layered sections includes an outer film (11), and an inner film (13) layered inside the outer film (11) to contact an object (3) to be packaged. The outer film (11) is movable with respect to the inner film (13), and has a coefficient of friction different from that of the inner film. The outer film is formed of a material having a small coefficient of friction, and the inner film is formed of a material having a large coefficient of friction.

FIG. 1



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a multi-layered packaging film, a packaging bag, and a package and a packaging method using the multi-layered packaging film and the packaging bag.

2. Description of the Related Art

[0002] Generally, products, such as household appliances, office machines, furniture, and precision machinery and tools, are packaged with a packaging box, etc. so as to prevent them from being scratched or damaged during storage and delivery. In this case, to protect the products from impacts, as well as from moisture, dust, mold, etc., the products are wrapped with a packaging film such as a polyethylene film, fixed into a cushion member such as a resin foam and then inserted into the packaging box.

[0003] However, even though the products are packaged as above, there may arise a problem that a friction is produced between the product and the packaging film so as to peel away a paint or coating layer from the product.

[0004] Recently, electronic appliances, such as air conditioners, handsets, notebooks, refrigerators, etc., are being designed with more attention to aesthetic details. As there is no difference in function or performance between the same kinds of electronic appliances, there is growing recognition that the electronic appliances are being treated as furniture, and consumers prefer an electronic appliance with a smart design and a fashionable color above other electronic appliances.

[0005] Accordingly, electronic appliances, which not only have more various and luxurious colors and patterns, but also present an ornamental value, , are coming out on the market.

[0006] To present such a fashionable atmosphere, the electronic appliances are usually coated with high glossy colors, e.g., high glossy black colors, which bring up the image of a piano coating and feel as if it is a luxurious crystal in a bright place.

[0007] However, the electronic appliances coated with the high glossy colors as above are easily scratched even by a small impact and the scratched portion is easily noticeable, as compared with a general electronic appliances, which are not coated with high glossy colors. Accordingly, it is very important for the packaging material, such as a packaging film, to protect the electronic appliances.

[0008] To prevent the electronic appliances from being scratched, there has been used a method that a protecting film is attached on outer surfaces of the electronic appliances to protect them. However, since the work of attaching the protecting film is troublesome and inefficient, productivity may be reduced. Further, since material cost of the protecting film is expensive, manufacturing costs may be increased. Also, bubbles may be produced in or on the outer surfaces of the electronic appliances on which the protecting film is attached, so that a quality in the exterior of the electronic appliances is deteriorated.

SUMMARY OF THE INVENTION

[0009] Illustrative, non-limiting exemplary embodiments of the present invention address at least the above problems and/or disadvantages and provide at least the advantages described below. Accordingly, an apparatus consistent with the present invention provides a multi-layered packaging film that can prevent products from being scratched during packaging and delivery.

[0010] Another apparatus consistent with the present invention provides a packaging bag that can prevent the products from being scratched during packaging and delivery.

[0011] Still another apparatus consistent with the present invention provides a package using the multi-layered packaging film and the packaging bag described above.

[0012] Also another aspect of the present invention is to provide a packaging method using the multi-layered packaging film and the packaging bag described above.

[0013] According to one aspect of an exemplary embodiment of the present invention, there is provided a packaging bag comprising at least two multi-layered sections adjacent with each other. Each of the at least two multi-layered sections comprise an outer film, and an inner film layered inside the outer film to contact an object to be packaged. The outer film is movable with respect to the inner film, and has a coefficient of friction different from that of the inner film.

[0014] The outer film may be formed of a material, e.g., a high-density polyethylene (HDPE), having a small coefficient of friction, and the inner film may be formed of a material, e.g., a low-density polyethylene (LDPE), having a large coefficient of friction.

[0015] Each of the at least two multi-layered sections may further comprise a subsidiary film layered outside the inner film. The subsidiary film may be formed of a material having a coefficient of friction smaller than that of the inner film.

[0016] The inner film may be formed in the shape of foam to carry out a cushioning function.

[0017] The packaging bag may be beneficially used for an object that has a surface polished at a high level.

[0018] The at least two multi-layered sections at at least one edge thereof may be joined with each other. Preferably, the at least two multi-layered sections may form a pocket, in such a manner that the at least two multi-layered sections at three edges thereof are joined with each other and at one edge thereof, separated from each other.

[0019] According to another aspect of an exemplary

embodiment of the present invention, there is provided a multi-layered packaging film comprising an outer film, and an inner film layered inside the outer film to contact an object to be packaged. The outer film is movable with respect to the inner film, and has a coefficient of friction different from that of the inner film.

[0020] The outer film may be formed of a material, e.g., a high-density polyethylene (HDPE), having a small coefficient of friction, and the inner film may be formed of a material, e.g., a low-density polyethylene (LDPE), having a large coefficient of friction.

[0021] The multi-layered packaging film may further comprise a subsidiary film layered outside the inner film. The subsidiary film may be formed of a material having a coefficient of friction smaller than that of the inner film.

[0022] The inner film may be formed in the shape of foam to carry out a cushioning function.

[0023] The at least two multi-layered sections at at least one edge thereof may be joined with each other.

[0024] The multi-layered packaging film may be beneficially used for an object that has a surface polished at a high level.

[0025] According to still another aspect of an exemplary embodiment of the present invention, there is provided a package comprising a packaging material to package an object, including an inner film having a large coefficient of friction and an outer film having a small coefficient of friction, the inner film being disposed to contact the object and the outer film being disposed outside the inner film and movable with respect to the inner film, a cushion member provided outside the outer film, and a packaging box to receive the cushion member. When the cushion member contacts the outer film and transmits an external impact thereto, a movement is generated in a largest scale between the inner film and the outer film.

[0026] The outer film may be formed of a high-density polyethylene (HDPE), and the inner film may be formed of a low-density polyethylene (LDPE).

[0027] The packaging material may further comprise a subsidiary film layered outside the inner film. The subsidiary film may be formed of a material having a coefficient of friction smaller than that of the inner film.

[0028] The inner film may be formed in the shape of foam to carry out a cushioning function.

[0029] The package may be beneficially used for an object that has a surface polished at a high level.

[0030] According to also another aspect of an exemplary embodiment of the present invention, there is provided a packaging method comprising packaging an object with a packaging material comprising an inner film having a large coefficient of friction and an outer film having a small coefficient of friction, in such a manner that the inner film is disposed to contact the object and the outer film is disposed outside the inner film and movable with respect to the inner film, providing a cushion member outside the outer film, and inserting the packaged object together with the cushion member into a packaging box.

[0031] The outer film may be formed of a high-density polyethylene (HDPE), and the inner film may be formed of a low-density polyethylene (LDPE).

[0032] The packaging material may further comprise a subsidiary film layered outside the inner film. The subsidiary film may be formed of a material having a coefficient of friction lower than that of the inner film.

[0033] The inner film may be formed in the shape of foam to carry out a cushioning function.

[0034] Other objects, advantages, and salient features of the invention will become apparent to those skilled in the art from the following detailed description, which, taken in conjunction with the annexed drawings, discloses exemplary embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035] These and/or other aspects and advantages of the present invention will become apparent and more readily appreciated from the following description of the exemplary embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a perspective view illustrating a packaging material (i.e., a packaging bag) in accordance with an exemplary embodiment of the present invention;
FIG.2 is a cross section view taken along line II-II of FIG. 1;
FIG. 3 is a schematic cross section view illustrating a package in which the packaging bag in accordance with the exemplary embodiment of the present invention is applied; and
FIG. 4 is a magnified view of a portion A of FIG.1

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0036] Reference will now be made in detail to the exemplary embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. The exemplary embodiments are described below in order to explain the present invention by referring to the figures.

[0037] Referring to FIGS. 1 and 2, there is illustrated a packaging material 1 to package an object 3 in accordance with an exemplary embodiment of the present invention. The packaging material 1 may be a packaging bag 2 to receive the object therein. The present invention is not limited to the packaging bag 2, however.

[0038] The packaging bag 2 comprises two multi-layered sections 10 adjacent with each other. Each of the two multi-layered sections 10 includes an outer film 11, and an inner film 13 layered inside the outer film 11 to contact the object 3 to be packaged. The outer film 11 and the inner film 13 are layered, so that they are not attached with each other, but separated from each other. Accordingly, the outer film 11 is movable with respect to the inner film 13.

[0039] The outer film 11 and the inner film 13 are formed to have a coefficient of friction different from each other. To be more specific, the outer film 11 is formed of a material, e.g., a high-density polyethylene (HDPE), having a small coefficient of friction, and the inner film 13 is formed of a material, e.g., a low-density polyethylene (LDPE), having a large coefficient of friction. At this time, the inner film 13 can be formed in the shape of foam to carry out a cushioning function. In this case, the inner film 13 functions to protect the object 3 from an impact, as well as from moisture, dust, mold, etc.

[0040] The packaging bag 2 is configured, such that the two multi-layered sections 10 at three edges E1, E2 and E3 thereof are joined with each other and at one edge E4 thereof, separated from each other, thereby forming a pocket. The joining between the two multi-layered sections 10 at the three edges E1, E2 and E3 can be carried out by a hot seal process.

[0041] Here, although the multi-layered sections 10 are illustrated and explained as joined with each other at the three edges E1, E2 and E3 thereof, the present invention is not limited thereto. For instance, the packaging bag 2 can be configured, such that the multi-layered sections 10 are joined with each other at one or more of four edges E1, E2, E3 and E4 thereof.

[0042] The object 3 may be, but is not limited to, household appliances such as a LCD monitor, a LCD TV, an air conditioner, a handset, a refrigerator, a home theater, etc., household goods such as furniture, etc., or machinery and tools, which have a surface polished at a high level.

[0043] Referring to FIG. 3, there is illustrated a package 30 to which the packaging bag 2 is applied. The package 30 includes a package bag 2, a cushion member 31, and a packaging box 33. The package bag 2 constitutes the packaging material 1 and has the same structure as described with reference to FIGS. 1 and 2. The cushion member 31 is disposed to contact an outer surface of the outer film 11. The packaging box 33 receives the cushion member 31.

[0044] An operation of packaging the object 3 by using the packaging bag 2 is as follows.

[0045] First, the object 3 is inserted between the two multi-layered sections 10 of the packaging bag 2, so that it comes in contact with the inner film 13 of the packaging bag 2.

[0046] Then, the cushion member 31 is provided outside the outer film 11 to fix the outer surface of the outer film 11.

[0047] Thereafter, the cushion member 31 in which the object 3 inserted between the two multi-layered sections 10 is contained is inserted into and fixed in the packaging box 33. As a result, the operation of packaging the object 3 is completed.

[0048] If an external impact is applied to the package 30 packaged as above, the object 3 moves along with the inner film 13 because it contacts the inner film 13 having the large coefficient of friction. Also, the cushion member 31 moves along with the outer film 11 because it contacts the outer film 11 having the low coefficient of friction. As a result, a place, in which a movement is generated in a largest scale, is between the inner film 13 and the outer film 11. Accordingly, the object 3 is prevented from being scratched or damaged.

[0049] As illustrated in FIG. 4, the packaging bag 2 can further include a subsidiary film 14 layered outside the inner film 13, i.e., opposite to the outer film 11. The subsidiary film 14 is preferably formed of a material, e.g., a high-density polyethylene (HDPE), having a coefficient of friction, which is lower than that of the inner film 13 and which can most effectively move the outer film 11 with respect to the subsidiary film 14.

[0050] Accordingly, if the external impact is applied to the package 30, the outer film 11 is more effectively moved because it comes in contact with the subsidiary film 14 having the coefficient of friction, which is lower than that of the inner film 13.

[0051] The subsidiary film 14 also functions to prevent the inner film 13 formed of the low-density polyethylene (LDPE) from being easily torn.

[0052] As previously noted, although the packaging material 1 in accordance with the exemplary embodiment of the present invention has been described as the packaging bag 2 in the shape of the pocket, it is not limited thereto. For instance, the packaging material 1 in accordance with the exemplary embodiment of the present invention can be formed in such a manner that a single multi-layered section 10 having an inner film 13 and an outer film 11 wraps around the outer surface of the object 3. In this case, it is also important to bring the object 3 in contact with the inner film 13 having a large coefficient of friction and to dispose the outer film 11 having a small coefficient of friction most outside.

[0053] According to the exemplary embodiments of the present invention as described above, the packaging material, i.e., the packaging bag, is configured, such that if an external impact is applied to the package, the outer film having the small coefficient of friction moves along with the cushion member with being in contact therewith. Accordingly, a movement of the object, which comes in contact with the inner film having the large coefficient of friction, to the inner film is reduced, thereby preventing the object from being scratched or damaged.

[0054] Also, according to the exemplary embodiments of the present invention, the packaging material has a multi-layered structure having the outer film of high density and the inner film of low density. Accordingly, a foaming gas such as a pentane gas or butane gas, which is possible to remain in the cushion member, is blocked from being conveyed to the object. The foaming gas, which is used to form the cushion member in the shape of foam during the foaming, usually remains in the foamed cushion member for about a month.

[0055] Although a few exemplary embodiments of the present general invention have been shown and described, it will be appreciated by those skilled in the art

that changes may be made in these exemplary embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the appended claims and their equivalents.

Claims

1. A packaging bag comprising:

at least two multi-layered sections adjacent with each other, each of the at least two multi-layered sections comprising an outer film, and an inner film layered inside the outer film to contact an object to be packaged,
wherein the outer film is movable with respect to the inner film, and has a coefficient of friction different from that of the inner film.

2. The packaging bag as claimed in claim 1, wherein the outer film is formed of a material having a smaller coefficient of friction that that of the inner film.

3. The packaging bag as claimed in claim 2, wherein the outer film is formed of a high-density polyethylene (HDPE).

4. The packaging bag as claimed in claim 2, wherein the inner film is formed of a low-density polyethylene (LDPE).

5. The packaging bag as claimed in claim 2, wherein the inner film is formed in the shape of foam.

6. The packaging bag as claimed in claim 5, wherein each of the at least two multi-layered sections further comprises a subsidiary film layered outside the inner film.

7. The packaging bag as claimed in claim 6, wherein the subsidiary film is formed of a material having a coefficient of friction smaller than that of the inner film.

8. The packaging bag as claimed in claim 1, wherein the object to be packaged has a surface polished at a high level.

9. The packaging bag as claimed in claim 1, wherein the at least two multi-layered sections are joined with each other at one or more edges.

10. The packaging bag as claimed in claim 9, wherein the at least two multi-layered sections are joined with each other at three edges thereof , and separated from each other at one edge thereof, thereby forming a pocket.

11. A multi-layered packaging film comprising:

an outer film; and
an inner film layered inside the outer film to contact an object to be packaged,
wherein the outer film is movable with respect to the inner film, and has a coefficient of friction different from that of the inner film.

12. The multi-layered packaging film as claimed in claim 11, wherein the outer film is formed of a material having a smaller coefficient of friction than that of the inner film.

13. The multi-layered packaging film as claimed in claim 12, wherein the outer film is formed of a high-density polyethylene (HDPE).

14. The multi-layered packaging film as claimed in claim 12, wherein the inner film is formed of a low-density polyethylene (LDPE).

15. The multi-layered packaging film as claimed in claim 12, wherein the inner film is formed in the shape of foam.

16. The multi-layered packaging film as claimed in claim 12, further comprising a subsidiary film layered outside the inner film.

17. The multi-layered packaging film as claimed in claim 16, wherein the subsidiary film is formed of a material having a coefficient of friction smaller than that of the inner film.

18. The multi-layered packaging film as claimed in claim 11, wherein the inner and the outer films are joined with each other at one or more edges thereof.

19. The multi-layered packaging film as claimed in claim 11, wherein the object to be packaged has a surface polished at a high level.

20. A package comprising:

a packaging material to package an object, comprising an inner film having a larger coefficient of friction than that of an outer film , the inner film being disposed to contact the object and the outer film being disposed outside the inner film and movable with respect to the inner film;
a cushion member provided outside the outer film; and
a packaging box to receive the cushion member, wherein when the cushion member contacts the outer film and transmits an external impact thereto, a movement is generated in a largest scale between the inner film and the outer film.

21. The package as claimed in claim 20, wherein the outer film is formed of a high density polyethylene (HDPE).

22. The package as claimed in claim 20, wherein the inner film is formed of a low density polyethylene (LDPE).

23. The package as claimed in claim 20, wherein the inner film is formed in the shape of a foam.

24. The package as claimed in claim 20, wherein the packaging material further comprises a subsidiary film layered outside the inner film.

25. The package as claimed in claim 24, wherein the subsidiary film is formed of a material having a coefficient of friction smaller than that of the inner film.

26. The package as claimed in claim 20, wherein the object to be packaged has a surface polished at a high level.

27. A packaging method comprising:

packaging an object with a packaging material comprising an inner film having a larger coefficient of friction than that of an outer film, in such a manner that the inner film is disposed to contact the object and the outer film is disposed outside the inner film and movable with respect to the inner film;
providing a cushion member outside the outer film; and
inserting the packaged object together with the cushion member into a packaging box.

28. The packaging method as claimed in claim 27, wherein the outer film is formed of a high-density polyethylene (HDPE), and the inner film is formed of a low-density polyethylene (LDPE).

29. The packaging method as claimed in claim 28, wherein the inner film is formed in the shape of foam.

30. The packaging method as claimed in claim 28, wherein the packaging material further comprises a subsidiary film layered outside the inner film.

31. The packaging method as claimed in claim 30, wherein the subsidiary film is formed of a material having a coefficient of friction smaller than that of the inner film.

32. A multi-layered packaging film as claimed in claim 18, wherein the inner film and the outer film are separated from each other except at the one or more edges.

FIG. 1

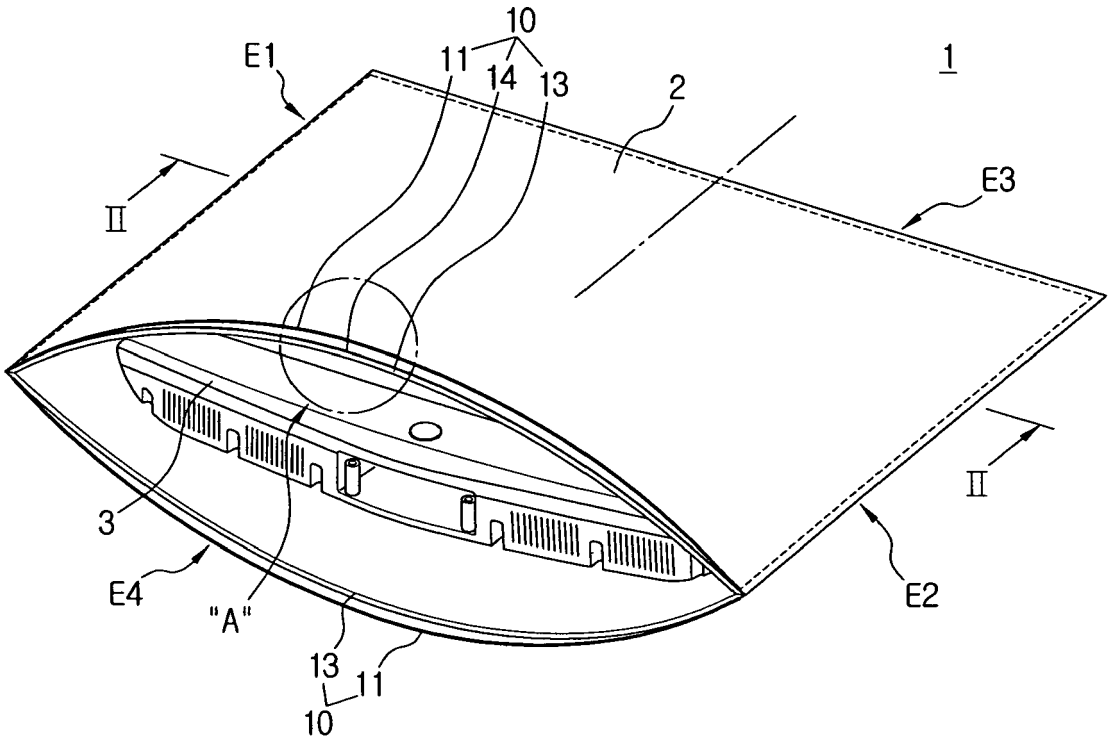

10
E1
11
14
13
2
1
II
E3
3
E4
"A"
II
E2
13
11
10

FIG. 2

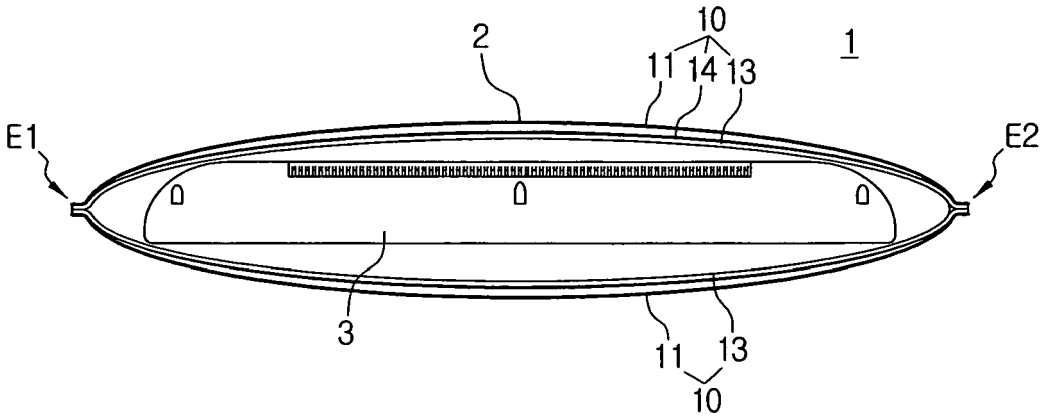

2
10
1
11
14
13
E1
E2
3
11
13
10

FIG. 3

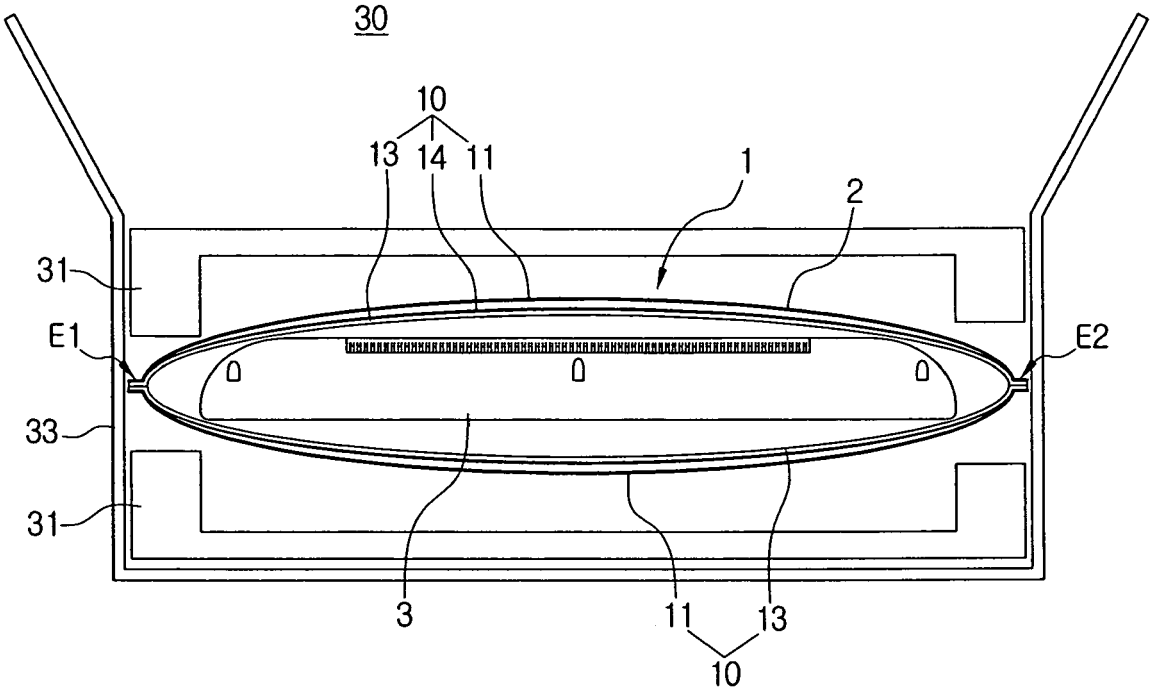
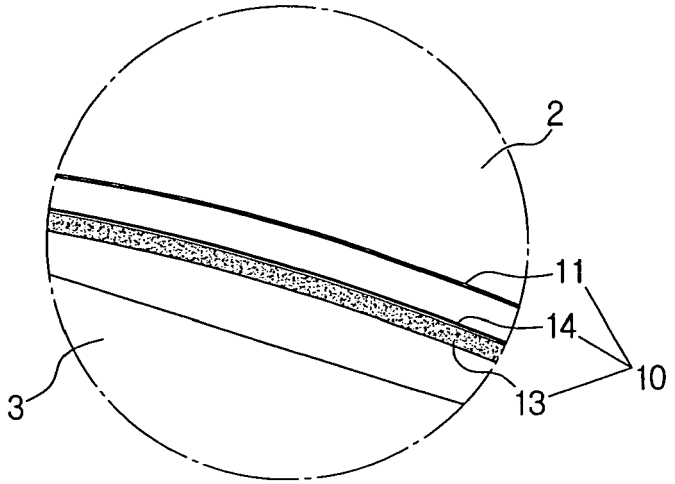


FIG. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 06 07 7285

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 June 2007	Dederichs, August

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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