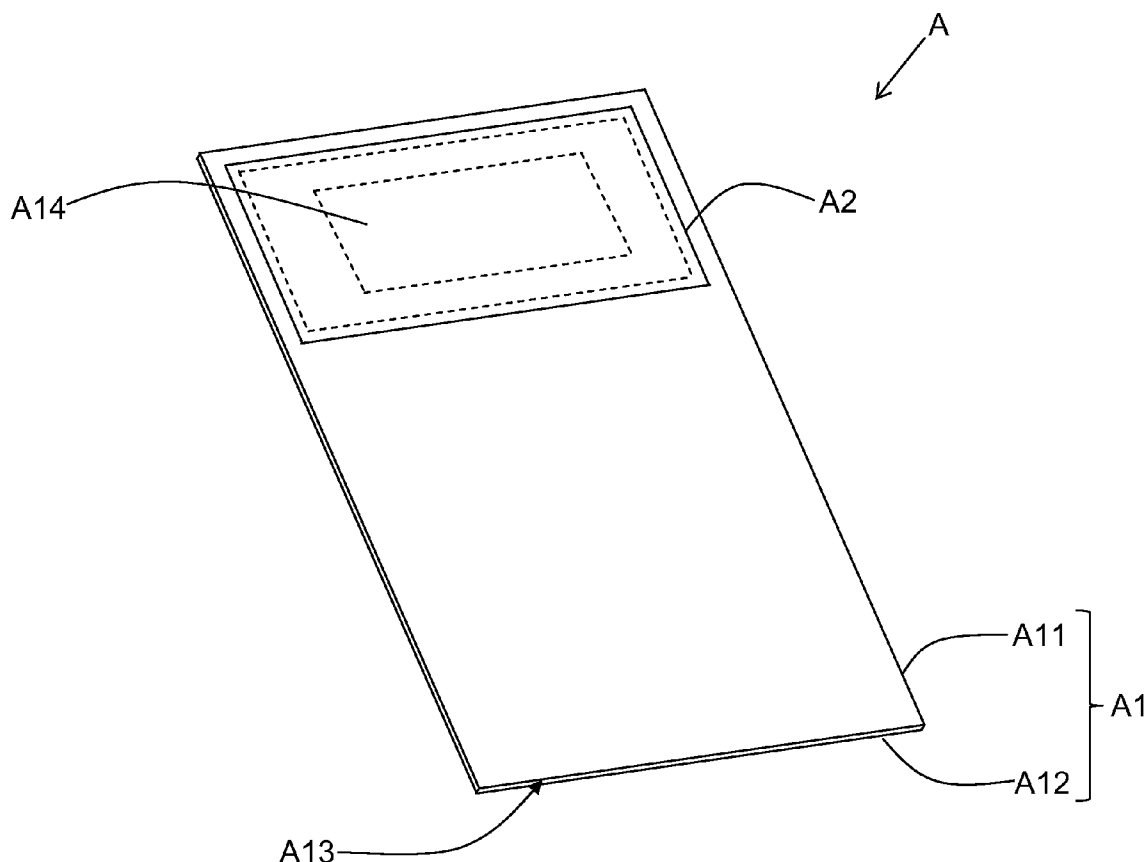




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(19) **United States**(12) **Patent Application Publication**
Chang(10) **Pub. No.: US 2012/0294553 A1**(43) **Pub. Date: Nov. 22, 2012**(54) **MEDICAL STERILIZATION BAG**(52) **U.S. Cl. 383/111**(57) **ABSTRACT**(75) Inventor: **Chin-Tsung Chang**, Keelung (TW)(73) Assignee: **SIGMA MEDICAL SUPPLIES**
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The present invention relates to an improved medical sterilization bag, comprising: a first thin layer, a second thin layer, an intermediate film layer, and a third thin layer, wherein the three edges of the second thin layer are attached to the three edges of the first thin layer for forming a bag structure with a first opening; a second opening is formed on the second thin layer. The intermediate film layer has a third opening attached to the surface of the second thin layer for covering the second opening; in addition, the size and the position of the third opening is relative and opposite to the second opening. The third thin layer is attached to the surface of the intermediate film layer for covering the third opening, wherein the third thin layer are tightly pasted with the intermediate film layer and can not to be ripped out from the intermediate film layer easily, but the intermediate film layer can easily be ripped out from the second thin layer; So that, by this way, the intermediate film layer and the third thin layer can easily be ripped out from the bag structure.



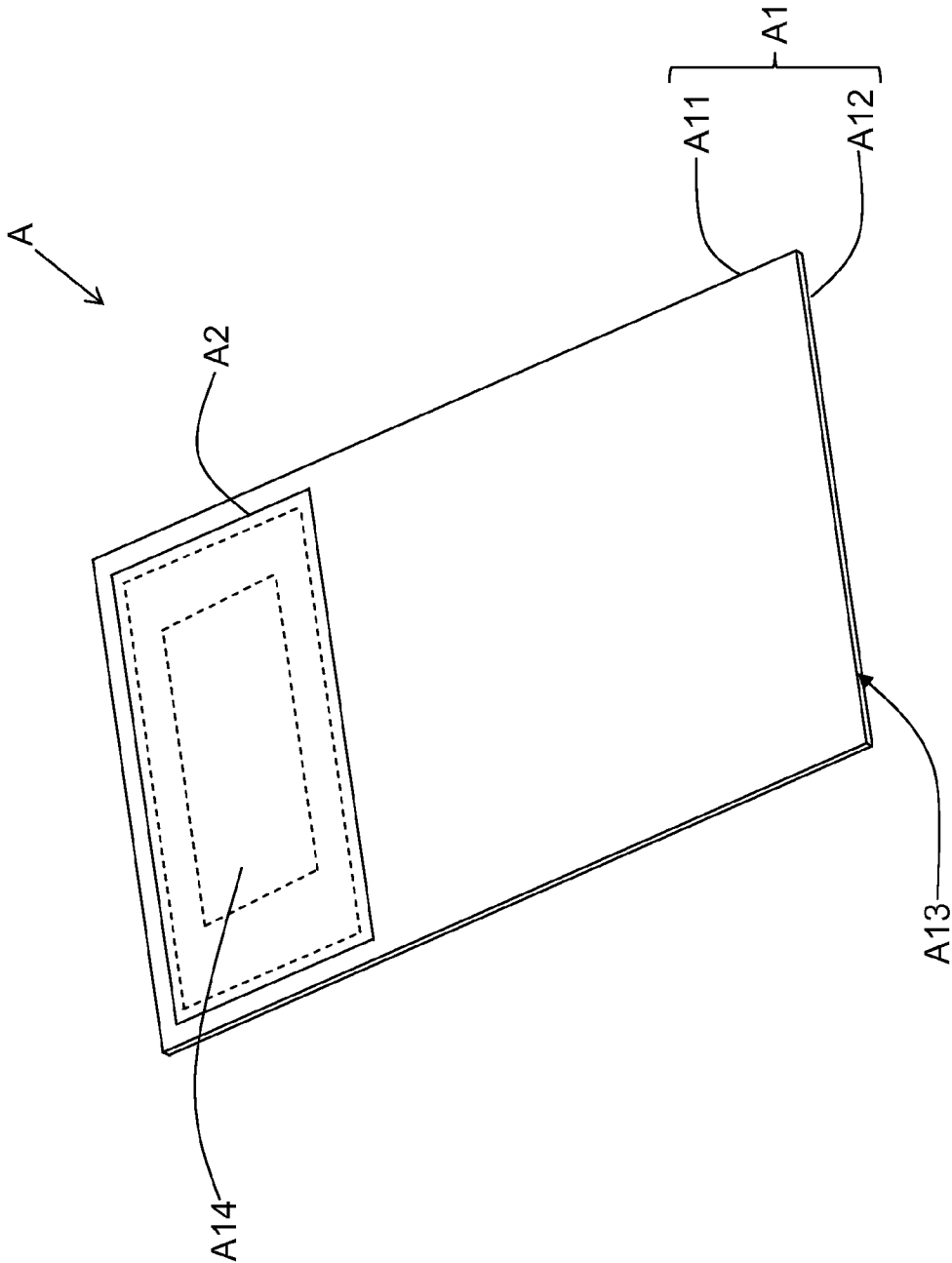
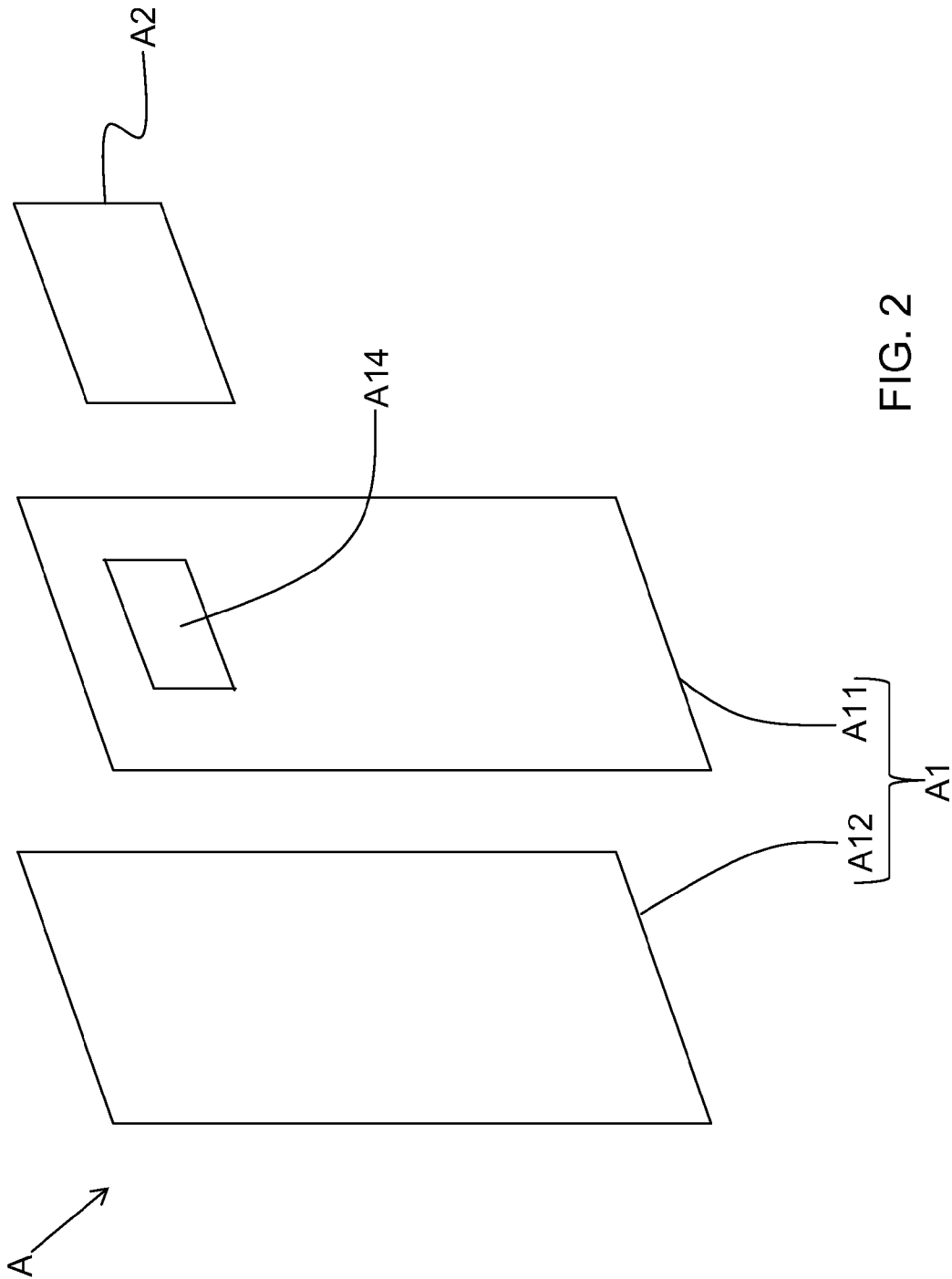
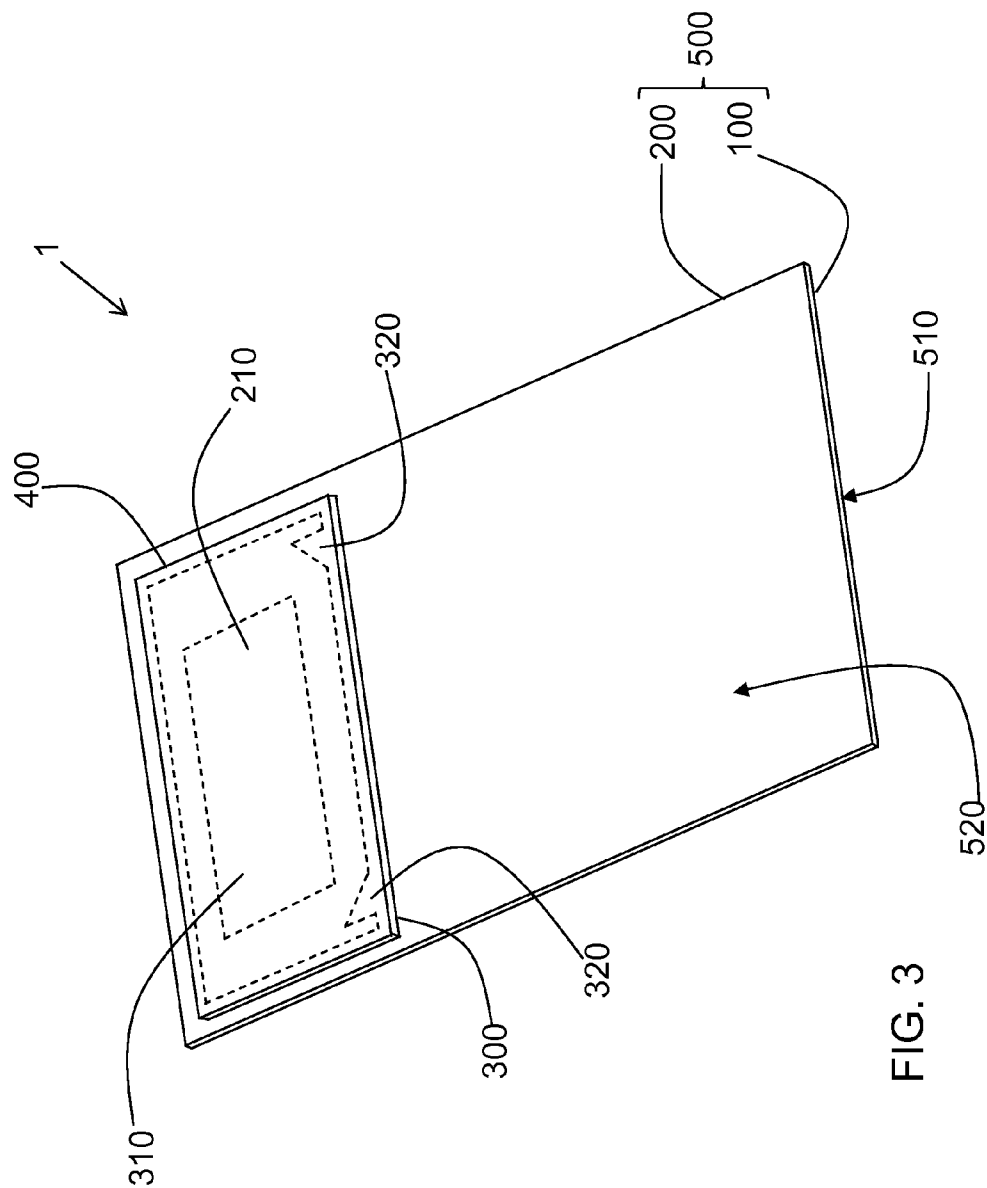
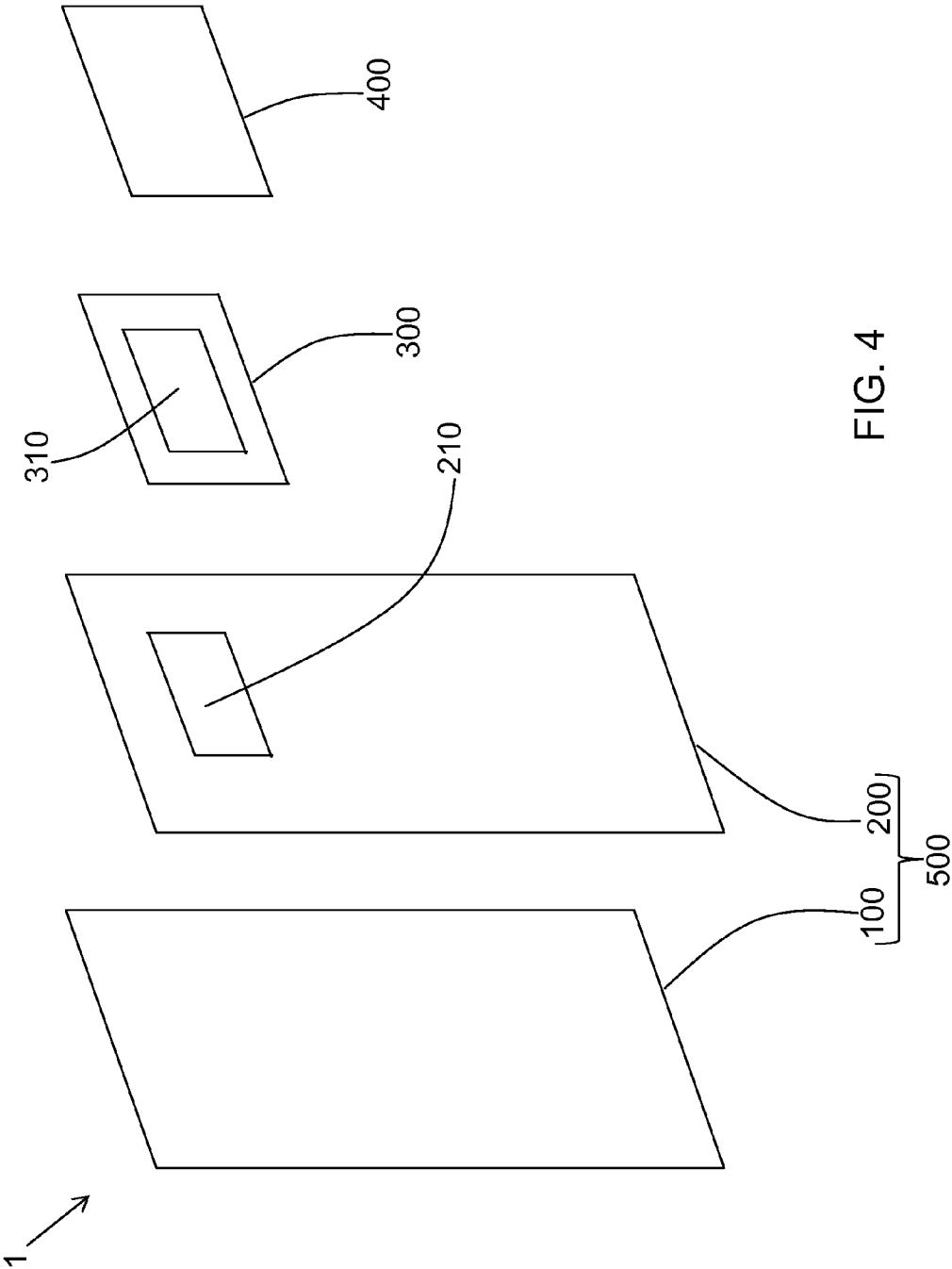


FIG. 1







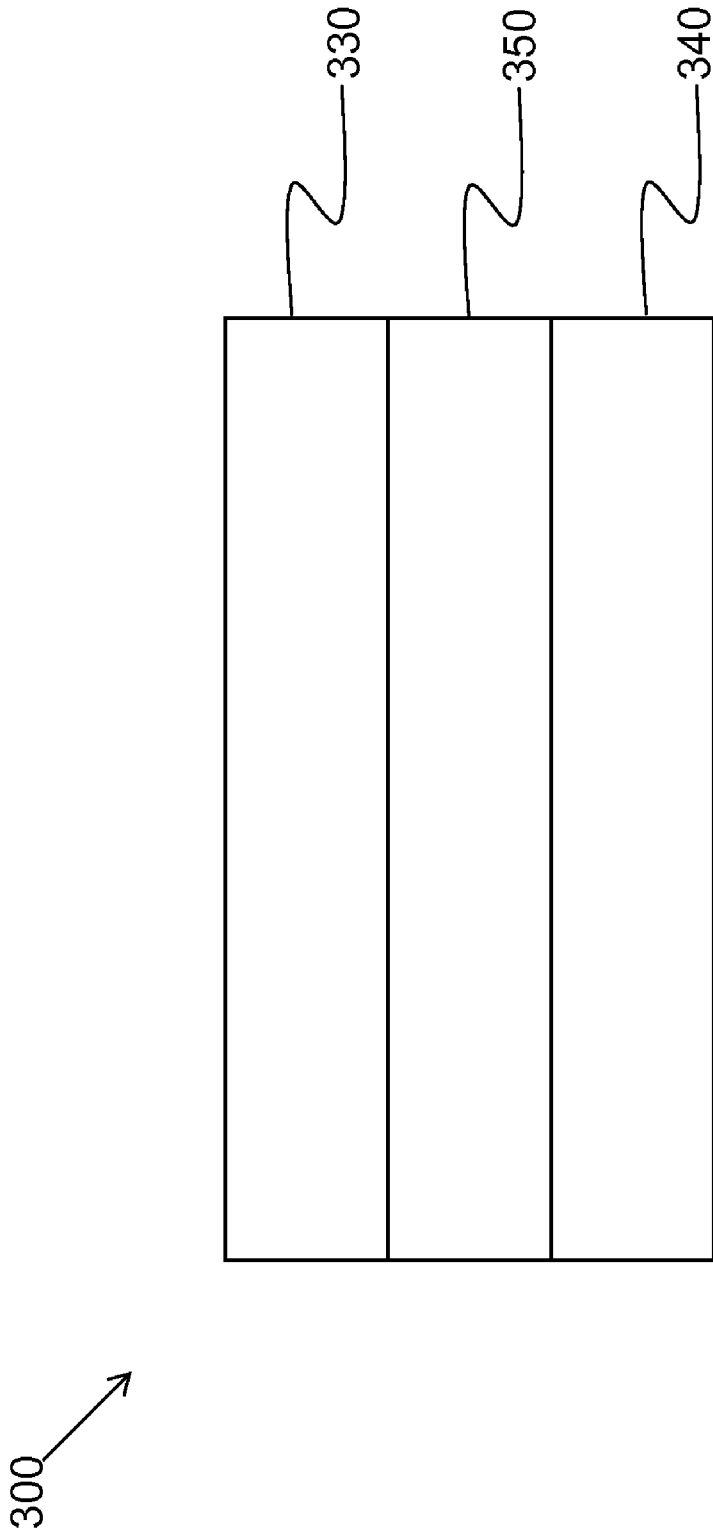


FIG. 5

MEDICAL STERILIZATION BAG

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates to a medical sterilization bag, and more particularly, to an improved medical sterilization bag having a first thin layer, a second thin layer, an intermediate film layer, and a third thin layer, in which the intermediate film layer and the third thin layer can easily be ripped out from a bag structure formed by the second thin layer and the first thin layer, so that an object under sterilization can be taken out of the bag structure through a second opening.

[0003] 2. Description of Related Art

[0004] Generally, when using medical instruments, for example, scalpels and forceps, it must to sterilize the medical instruments in advance for keeping the medical instruments in an aseptic state. Currently, there are some sterilizing methods for sterilizing the medical instruments, such as gamma irradiation way and ethylene oxide (EO) way. When undertaking the sterilization, the medical instruments are put in a container, for instance, a sterilization bag. Different medical instruments can be accommodated in different sterilization bags for undertaking sterilization and being maintained in the aseptic state.

[0005] Please refer to FIG. 1 and FIG. 2, there are shown a stereo view and an exploded view of a conventional medical sterilization bag. As shown in FIG. 1 and FIG. 2, the conventional medical sterilization bag A includes a bag structure A1 and a breathable paper layer A2, wherein the bag structure A1 consists of a first non-permeability thin layer A11 and a second non-permeability thin layer A12, and both the two non-permeability thin layers (A11 and A12) are manufactured by polyethylene (PE). In the conventional medical sterilization bag A, the three edges of the first non-permeability thin layer A11 are tightly attached with the three edges of the second non-permeability thin layer A12 for forming a first opening A13 in the bag structure A1, and an object under sterilization (i.e., the medical instruments) can be put into the bag structure A1 through the first opening A13. Moreover, by way of the tightly attachment between the first non-permeability thin layer A11 and the second non-permeability thin layer A12, the two thin layers (A11 and A12) are able to withstand the object under sterilization with weight thereof less than 20 Kg. Besides, a second opening A14 is formed on the first non-permeability thin layer A11, used for taking the object have been sterilized out. Furthermore, for avoiding water mist entering the bag structure A1 and resulting in a bad influence on the object in the bag structure A1, for instance, causing the object under sterilization in the bag structure A1 get rust or moisture, the breathable paper layer A2 is covered the second opening A14 for blocking the water mist or foreign objects to enter the bag structure A1; moreover, the breathable paper layer A2 allows the sterilization gas to get into the bag structure A1 for sterilizing the object under sterilization.

[0006] In the conventional medical sterilization bag A, the breathable paper layer A2 is tightly attached to the first non-permeability thin layer A11 for avoiding the breathable paper layer A2 being ripped out from the first non-permeability thin layer A11 easily. However, since the weight that the breathable paper layer A2 and the first non-permeability thin layer A11 can withstand is merely 2-5 Kg, the breathable paper layer A2 may be broken when the medical sterilization bag A contains the objects and is taken up; meanwhile, the broken

breathable paper layer A2 may produced paper scraps and the medical instruments (i.e., the objects contained in the medical sterilization bag A) may be polluted by the paper scraps.

[0007] Accordingly, in view of the conventional medical sterilization bag still has shortcomings and drawbacks, the inventor of the present application has made great efforts to make inventive research thereon and eventually provided an improved medical sterilization bag.

BRIEF SUMMARY OF THE INVENTION

[0008] The primary objective of the present invention is to provide an improved medical sterilization bag having improvement in material and structure thereof, so that a breathable paper layer can easily be ripped out from a bag structure for taking medical instruments out, moreover, small paper scraps would not be produced when ripping the breathable paper layer out, so that, the medical instruments are prevented from being polluted.

[0009] Accordingly, to achieve the primary objective of the present invention, the inventor proposes a improved medical sterilization bag, comprising:

[0010] a first thin layer, fabricated by a waterproof and gasproof material;

[0011] a second thin layer, also fabricated by the waterproof and gasproof material, wherein the three edges of the second thin layer are attached to the three edges of the first thin layer for forming a bag structure with a first opening, so that an object under sterilization can be put into an accommodating space of the bag structure through the first opening, moreover, a second opening is formed on the second thin layer and the object under sterilization can be taken out of the accommodating space through the second opening;

[0012] an intermediate film layer, attached to the surface of the second thin layer and covering the second opening, wherein the intermediate film layer has a third opening and the size and the position of the third opening are relative and opposite to the second opening; and

[0013] a third thin layer, fabricated by a material with waterproof, moisture permeability and breathable properties, and attached to the surface of the intermediate film layer for covering the third opening, wherein the third thin layer is adopted for allowing the water mist to enter the accommodating space when the sterilization is executed in the bag structure;

[0014] wherein the third thin layer are tightly pasted with the intermediate film layer and can not to be ripped out from the intermediate film layer easily, but the intermediate film layer can easily be ripped out from the second thin layer; So that, by this way, the intermediate film layer and the third thin layer can easily be ripped out from the bag structure.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0015] The invention as well as a preferred mode of use and advantages thereof will be best understood by referring to the following detailed description of an illustrative embodiment in conjunction with the accompanying drawings, wherein:

[0016] FIG. 1 is a stereo view of a conventional medical sterilization bag;

[0017] FIG. 2 is an exploded view of the conventional medical sterilization bag;

[0018] FIG. 3 is a stereo diagram of a first embodiment of an improved medical sterilization bag according to the present invention;

[0019] FIG. 4 is an exploded view of the first embodiment of the improved medical sterilization bag according to the present invention; and

[0020] FIG. 5 is a sectional view of an intermediate film layer of the first embodiment of the improved medical sterilization bag.

DETAILED DESCRIPTION OF THE INVENTION

[0021] To more clearly describe an improved medical sterilization bag according to the present invention, embodiments of the present invention will be described in detail with reference to the attached drawings hereinafter.

[0022] The present invention includes two embodiments for describing the improved medical sterilization bag. Please refer to FIG. 3 and FIG. 4, there are shown a stereo diagram and an exploded view of the first embodiment of the improved medical sterilization bag according to the present invention. As shown in FIG. 3 and FIG. 4, the improved medical sterilization bag 1 includes: a first thin layer 100, a second thin layer 200, an intermediate film layer 300, and a third thin layer 400.

[0023] Both the first thin layer 100 and the second thin layer 200 are fabricated by a waterproof and gasproof material, and the three edges of the second thin layer 200 are attached to the three edges of the first thin layer 100 for forming a bag structure 500 with a first opening 510, so that an object under sterilization can be put into an accommodating space 520 of the bag structure 500 through the first opening 510. Moreover, a second opening 210 is formed on the second thin layer 200 and the object under sterilization can be taken out of the accommodating space 520 through the second opening 210.

[0024] The intermediate film layer 300 is attached to the surface of the second thin layer 200 and covers the second opening 210, wherein the intermediate film layer 300 has a third opening 310, and the size and the position of the third opening 310 are relative and opposite to the second opening 210.

[0025] The third thin layer 400 is fabricated by a material with waterproof, moisture permeability and breathable properties, and is attached to the surface of the intermediate film layer 300 for covering the third opening 310, wherein the third thin layer 400 is adopted for allowing the water mist to enter the accommodating space 520 when the sterilization is executed in the bag structure 500.

[0026] In the first embodiment of the improved medical sterilization bag, the third thin layer 400 are tightly pasted with the intermediate film layer 300 and can not to be ripped out from the intermediate film layer 300 easily, but the intermediate film layer 300 can easily be ripped out from the second thin layer 200; So that, by this way, the intermediate film layer 300 and the third thin layer 400 can easily be ripped out from the bag structure 500, so as to take out the medical instruments been completed the sterilization from the accommodating space 520 of the bag structure 500; in addition, small paper scraps would not be produced when ripping intermediate film layer 300 out from the second thin layer 200, so that, the medical instruments are prevented from being polluted.

[0027] Besides, two non-pasted districts 320 are formed between the intermediate film layer 300 and the second thin layer 200, used for assisting a user to rip the intermediate film

layer 300 out from the second thin layer 200 by way of putting user's fingers into the two non-pasted districts 320.

[0028] Furthermore, please refer to FIG. 5, which illustrates a sectional view of the intermediate film layer in the first embodiment of the improved medical sterilization bag. As shown in FIG. 5, the intermediate film layer 300 further includes: a first film layer 330, a second film layer 340, and an intermediate separation layer 350, wherein the first film layer 330 is tightly attached to the third thin layer 400 and can not be ripped out from the third thin layer 400 easily. The second film layer 340 is attached to the second thin layer 200 and can be ripped out from the second thin layer 200 easily. The intermediate separation layer 350 is tightly attached to the first film layer 330 and the second film layer 340, used for separating the first film layer 330 and the second film layer 340, so as to avoid the characteristics interference occurring in the first film layer 330 and the second film layer 340 resulted from the material mixing of the first film layer 330 and the second film layer 340. In the first embodiment of the improved medical sterilization bag, the material of the first film layer 330 is low-density polyethylene (LDPE), the material of the second film layer 340 is ethylene vinyl acetate (EVA), and the material of the intermediate separation layer 350 is high-density polyethylene (HDPE); in addition, the thickness of the first film layer is 30 μm , the thickness of the second film layer is 15 μm , and the thickness of the intermediate separation layer is 30 μm .

[0029] The present invention further includes a second embodiment for describing the improved medical sterilization bag. The same to aforesaid first embodiment, the second embodiment of the improved medical sterilization bag includes: the first thin layer 100, the second thin layer 200, the intermediate film layer 300, and the third thin layer 400. However, different from the first embodiment, in the second embodiment of the improved medical sterilization bag, the first film layer 330 is low-density polyethylene (LDPE), the material of the second film layer 340 is a specific LDPE, and the material of the intermediate separation layer 350 is polyethylene terephthalate (PET); in addition, the first film layer 330 is 20 μm , the thickness of the second film layer 340 is 20 μm , and the thickness of the intermediate separation layer 350 is 12 μm . The specific LDPE is made by adding plastic particles having strippable characteristics into the low-density polyethylene (LDPE), for instance, EVA plastic particles. The plastic particles with strippable characteristics can facilitate the second film layer 340 easily be ripped from the second thin layer 200 without producing any scraps.

[0030] Thus, through the above descriptions, the improved medical sterilization bag of the present invention has been disclosed completely and clearly in the above description. In summary, the present invention has the following advantages:

[0031] 1. The improved medical sterilization bag has improvement in material and structure thereof, so that the intermediate film layer and the third thin layer can easily be ripped out from the bag structure for taking the medical instruments out, moreover, small paper scraps would not be produced when ripping the intermediate film layer and the third thin layer out, so that, the medical instruments are prevented from being polluted.

[0032] 2. Besides, two non-pasted districts are formed between the intermediate film layer and the second thin layer, used for assisting a user to rip the intermediate film layer out from the second thin layer by way of putting user's fingers into the two non-pasted districts.

[0033] The above description is made on embodiments of the present invention. However, the embodiments are not intended to limit scope of the present invention, and all equivalent implementations or alterations within the spirit of the present invention still fall within the scope of the present invention.

I claim:

1. An improved medical sterilization bag, comprising:
 - a first thin layer, being fabricated by a waterproof and gasproof material;
 - a second thin layer, also being fabricated by the waterproof and gasproof material, wherein the three edges of the second thin layer are attached to the three edges of the first thin layer for forming a bag structure with a first opening, so that an object under sterilization can be put into an accommodating space of the bag structure through the first opening, moreover, a second opening is formed on the second thin layer and the object under sterilization can be taken out of the accommodating space through the second opening;
 - an intermediate film layer, being attached to the surface of the second thin layer and covering the second opening, wherein the intermediate film layer has a third opening and the size and the position of the third opening are relative and opposite to the second opening; and
 - a third thin layer, being fabricated by a material with waterproof, moisture permeability and breathable properties, and being attached to the surface of the intermediate film layer for covering the third opening, wherein the third thin layer is adopted for allowing the water mist to enter the accommodating space when the sterilization is executed in the bag structure;
 wherein the third thin layer are tightly pasted with the intermediate film layer and can not be ripped out from the intermediate film layer easily, but the intermediate film layer can easily be ripped out from the second thin layer; So that, by this way, the intermediate film layer and the third thin layer can easily be ripped out from the bag structure.
2. The improved medical sterilization bag of claim 1, wherein the intermediate film layer further comprising:

- a first film layer, being tightly attached to the third thin layer and can not be ripped out from the third thin layer easily;
 - a second film layer, being attached to the second thin layer and can be ripped out from the second thin layer easily; and
 - an intermediate separation layer, being tightly attached to the first film layer and the second film layer, used for separating the first film layer and the second film layer, so as to avoid the characteristics interference occurring in the first film layer and the second film layer resulted from the material mixing of the first film layer and the second film layer.
3. The improved medical sterilization bag of claim 2, wherein the material of the first film layer is low-density polyethylene (LDPE), the material of the second film layer is ethylene vinyl acetate (EVA), and the material of the intermediate separation layer is high-density polyethylene (HDPE).
 4. The improved medical sterilization bag of claim 3, wherein the thickness of the first film layer is 30 μm , the thickness of the second film layer is 15 μm , and the thickness of the intermediate separation layer is 30 μm .
 5. The improved medical sterilization bag of claim 2, wherein the material of the first film layer is low-density polyethylene (LDPE), the material of the second film layer is a specific LDPE, and the material of the intermediate separation layer is poly-ethylene terephthalate (PET).
 6. The improved medical sterilization bag of claim 5, wherein the thickness of the first film layer is 20 μm , the thickness of the second film layer is 20 μm , and the thickness of the intermediate separation layer is 12 μm .
 7. The improved medical sterilization bag of claim 5, wherein the specific LDPE is made by adding plastic particles having strippable characteristics into the low-density polyethylene (LDPE).
 8. The improved medical sterilization bag of claim 1, wherein at least one non-pasted district is formed between the intermediate film layer and the second thin layer, used for assisting a user to rip the intermediate film layer out from the second thin layer by way of putting user's fingers into the non-pasted district.

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