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- (54) **COMPRESSION STORAGE BAG**
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- (52) **U.S. Cl. 206/524.8; 383/64**
- (57) **ABSTRACT**
A compression storage bag is constructed such that the operation to store and accommodate goods to be stored such as beddings and clothes after compression-storage is made easy, and which has a broad range of applicable storing and accommodating places. The compression storage bag is preferably made of a non-permeable synthetic resin material, and is provided with a non-return valve preferably made of a synthetic resin material on one portion thereof. A base member having a planar form is put inside the compression storage bag, and the shape of the base portion of the compression storage bag is retained. When goods to be stored such as beddings and clothes are stored inside the compression storage bag, the whole compression storage bag retains its shape, for example, a substantially rectangular shape. When, for example, a suction nozzle of a vacuum cleaner is inserted into an opening portion of the non-return valve in this state, and a compression-storing operation is performed, the compression storage bag including the goods to be stored are compressed to define a substantially rectangular shape.

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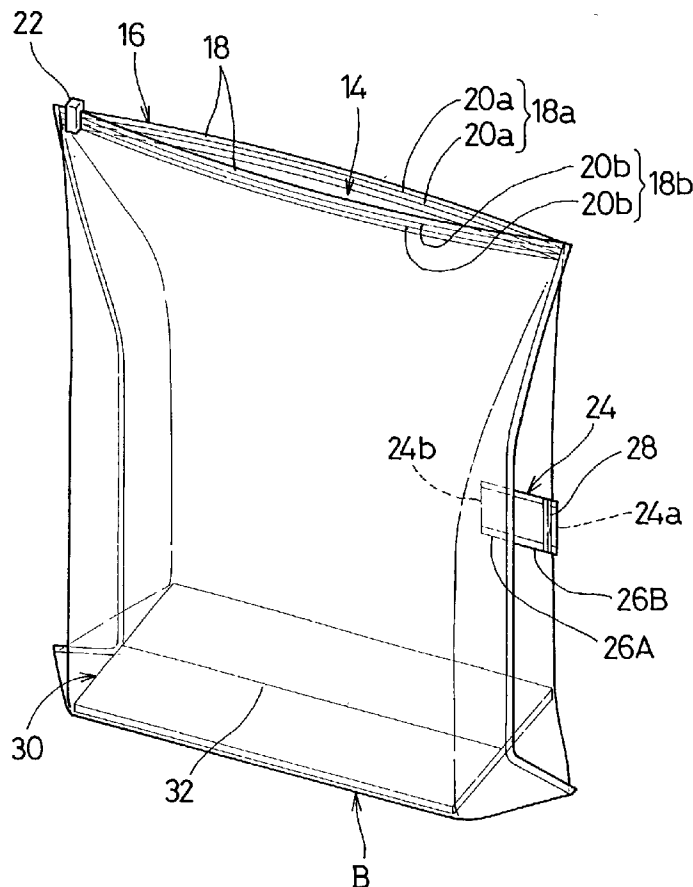


FIG.1

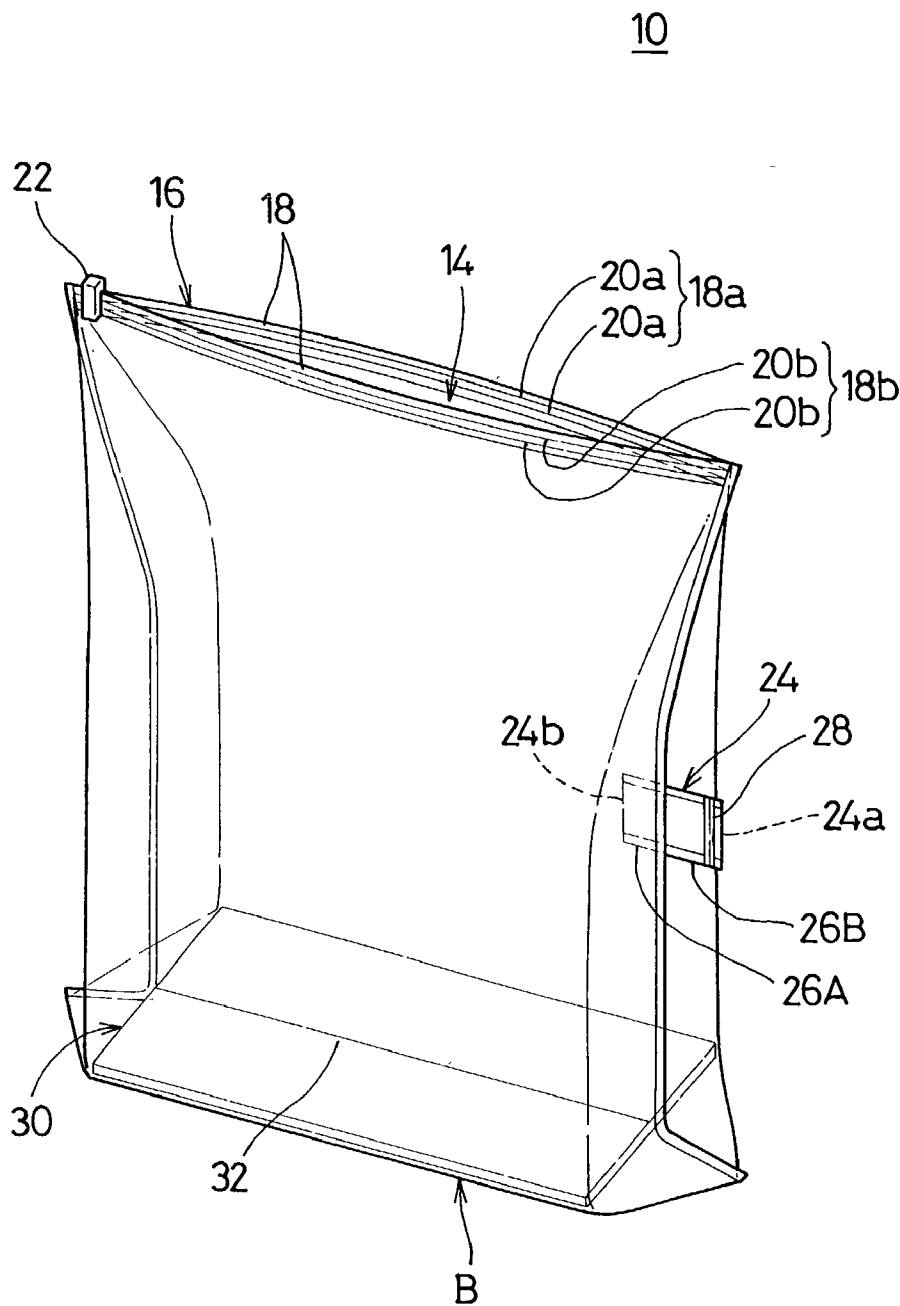


FIG. 3

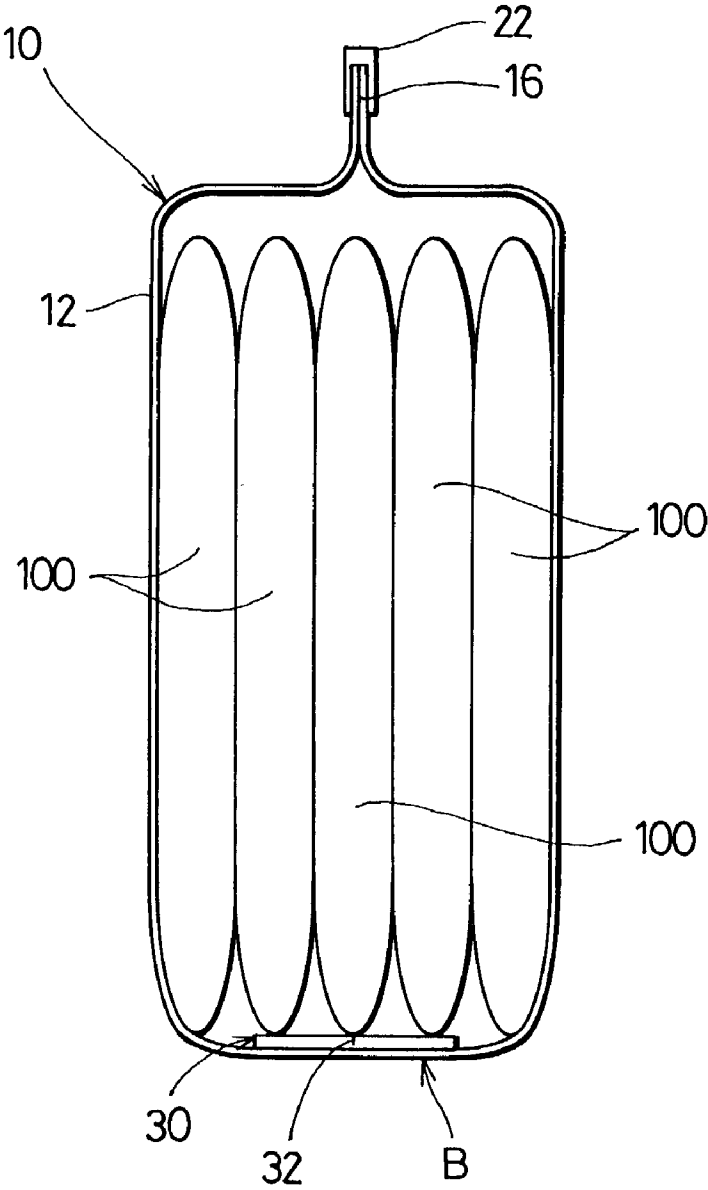
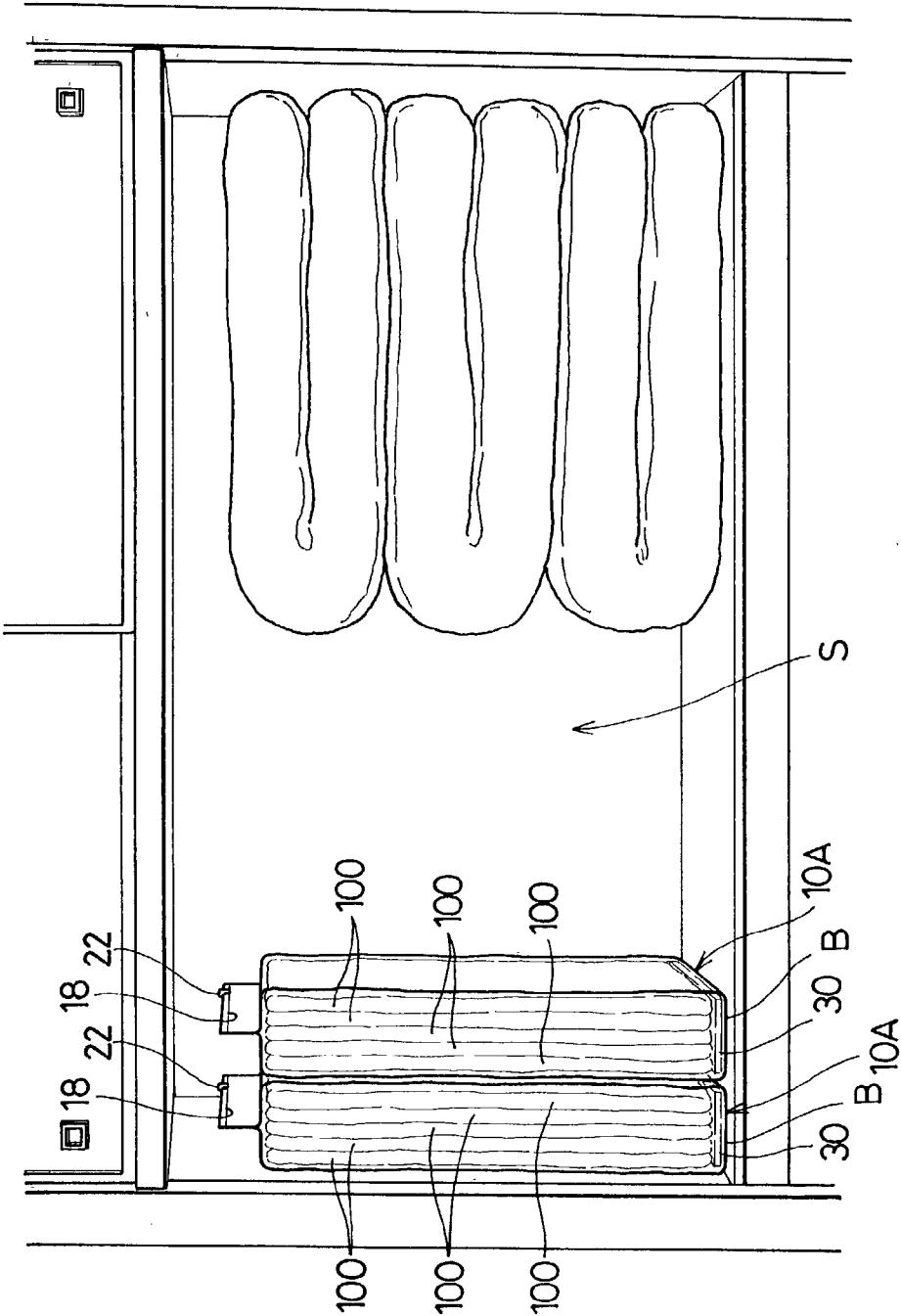


FIG. 4



COMPRESSION STORAGE BAG

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a compression storage bag, and more particularly, relates to a compression storage bag that is constructed to compression-store goods such as beddings, blankets, and heavy clothes, in a very compact form.

[0003] 2. Description of the Prior Art

[0004] When goods to be stored such as beddings and clothes are compression-stored using a conventional compression storage bag, the compression storage bag compressed to a flat form together with the goods to be stored is usually piled up in a horizontal state, and stored in a planar form at a storing space within a storing location, such as a closet or a chest of drawers, as appropriate.

[0005] However, when storing many compression storage bags in a closet or other storage area by piling the bags up, since the above-mentioned conventional compression storage bags compressed to a flat form together with the goods to be stored were stored in planar state, a storing space that is at least large enough to accommodate the planar area of the compression storage bag after compression was needed, and it lacked storage space flexibility. A lot of effort was required in the storing work with this conventional compression storage bag, because it was necessary to secure planar space with at least a certain minimum amount of storage area.

[0006] In other words, with conventional compression storage bags, it was difficult to make the storing space small when storing the compression storage bag after compression, and the extent to which the storing and accommodating space could be fully utilized was very limited.

SUMMARY OF THE INVENTION

[0007] In order to overcome the problems described above, preferred embodiments of the present invention provide a compression storage bag, in which the operation to store and accommodate goods such as beddings and clothes after compression-storage is made easy, and which has a broad range of applicable storing and accommodating places.

[0008] A compression storage bag according to a preferred embodiment of the present invention is preferably made of a non-permeable synthetic resin material, and includes a non-return valve preferably made of a synthetic resin material on one portion thereof. This compression storage bag includes a base member having a planar form that is arranged inside the compression storage bag in a state such that the base member is freely inserted and removed from the compression storage bag.

[0009] The non-return valve preferably includes an inner valve portion which is arranged inside the compression storage bag, and an outer valve portion which is communicatively connected to the inner valve portion, and arranged outside of the compression storage bag. The non-return valve preferably has a flat tubular shape.

[0010] The base member is preferably made of paper that is rigid to some extent or has semi-rigidity, and is con-

structed to be bendable at an intermediate portion in a longitudinal direction or a width-wise direction of the base member.

[0011] In addition, the base member preferably includes a bend line for bending that extends in the longitudinal direction or the width-wise direction of the member.

[0012] The base member preferably has a substantially rectangular, planar form, and includes the bend line for bending provided at an intermediate portion in the width-wise direction of the member, the bend line extending in the longitudinal direction of the base member.

[0013] The base member preferably includes a porous material such as activated carbon and porous ore. The base member preferably includes a layer formed by coating or laminating the porous material, as appropriate.

[0014] The base member having a planar form is arranged inside the compression storage bag in such a state that the base member is freely inserted and removed from the compression storage bag. Therefore, when the base member is put inside the compression storage bag, the shape of the base portion of the compression storage bag is retained. Furthermore, when goods to be stored such as beddings and clothes are accommodated inside the compression storage bag, the whole compression storage bag retains its shape, for example, a substantially rectangular shape. When, for example, a suction nozzle of a vacuum cleaner is inserted into the non-return valve in this state, and a compression-storing operation is performed, the compression storage bag together with the goods to be stored is compressed to define a substantially rectangular shape. At this point, an inflow of outside air into the compression storage bag is prevented by the effect of the non-return valve.

[0015] With the compression storage bag according to preferred embodiments of the present invention, it is possible to erect and place the compression storage bag compressed together with the goods to be stored in a perpendicular state with the base portion of the compression storage bag, which is supported by the base member, becoming the surface contacting the ground. Therefore, it becomes possible to store the compression storage bag inside a storing place such as a closet in an erected state. As a result, compression-storing of the goods to be stored using the compression storage bag according to preferred embodiments of the present invention significantly reduces planar storing space in comparison with a planar pile-up storage using a conventional compression storage bag.

[0016] The non-return valve having a flat tubular shape is constructed to have the inner valve portion arranged inside the compression storage bag, and the outer valve portion communicatively connected to the inner valve portion and arranged outside of the compression storage bag. Hence, airflow from the interior to the exterior of the compression storage bag is shut off by the effect of the inner valve portion, and airflow from the exterior to the interior of the compression storage bag is shut off by the effect of the outer valve portion.

[0017] The base member is preferably made of paper that is rigid to some extent or has semi-rigidity. Hence, the base member is sturdy because of this rigidity or semi-rigidity, and it is easy to retain the shape of the base portion of the compression storage bag. Furthermore, the base member is

bendable at an intermediate portion in the longitudinal direction or the width-wise direction of the member. Hence, when installing the base member in the compression storage bag, it is easy to set the base member on the base portion inside the compression storage bag by bending the base member.

[0018] The base member is made to be easily bendable at the bend line for the bending portion, which extends in the longitudinal direction or the width-wise direction of the base member.

[0019] The base member has a substantially rectangular, planar form, and has the bend line for bending. The bend line is provided at an intermediate portion in the width-wise direction of the base member, and extends in the longitudinal direction of the base member. This makes the base member more easily bendable at the bend line for bending.

[0020] The base member includes a porous material such as activated carbon and porous ore so as to absorb gas and moisture by the absorbing effect of the porous material.

[0021] The base member preferably includes a layer formed by coating or laminating porous material, as appropriate. Hence, the absorbing feature of the porous material such as activated carbon and porous ore acts at the layer of the base member.

[0022] Other elements, characteristics, features, and advantages of the present invention will become more apparent, from the following detailed descriptions of preferred embodiments of the present invention with reference to the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. 1 is a perspective view showing a preferred embodiment of the present invention;

[0024] FIG. 2 is an exploded perspective view of the compression storage bag in FIG. 1;

[0025] FIG. 3 is an illustrated view showing the state before conducting the compression-storing operation with goods to be stored such as beddings located inside of the compression storage bag shown in FIGS. 1 and 2; and

[0026] FIG. 4 is a perspective view showing a state with the compression storage bag stored within a storing place such as a closet, after conducting the compression-storing operation using the compression storage bag shown in FIGS. 1 and 2, with goods to be stored such as beddings located inside the compression storage bag.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0027] FIG. 1 is a perspective view showing a preferred embodiment of the present invention. FIG. 2 is an exploded perspective view of the compression storage bag in FIG. 1. FIG. 3 is an illustrated view showing the state before conducting the compression-storing operation (suction operation) with goods to be stored such as beddings put inside the compression storage bag shown in FIGS. 1 and 2. FIG. 4 is a perspective view showing a state with the compression storage bag stored within a storing place such as a closet, after conducting the compression-storing operation (suction operation) using the compression storage bag

shown in FIGS. 1 and 2, with goods to be stored such as beddings put inside the compression storage bag.

[0028] A compression storage bag 10 according to a preferred embodiment of the present invention is provided with a storage bag main body 12 of, for example, roughly a longitudinally oblong shape seen in the plan view thereof. The storage bag main body 12 is preferably made of a non-permeable laminated film including a synthetic resin material, or other suitable material. The storage bag main body 12 has an opening 14 on one end in the longitudinal direction thereof. The opening 14 defines an entrance and exit portion for inserting and removing goods to be stored such as beddings, floor cushions, and clothes.

[0029] The opening 14 of the storage bag main body 12 is blockaded by a blockading member 16, as appropriate, and is hermetically sealed. The blockading member 16 preferably includes, for example, a pair of blockading fasteners 18. The pair of blockading fasteners 18 has a male half-member 18a extending in the lateral direction of the storage bag main body 12, and a female half-member 18b in occlusion with the male half-member 18a. The male half-member 18a is provided, for example, with two convex portions 20a, and the female half-member 18b is provided with two concave portions 20b that correspond with the convex portions 20a.

[0030] There is a clamp 22 arranged and installed on the pair of blockading fasteners 18, which supports an occlusion of the male half-member 18a on one side, and the female half-member 18b on the other side. The clamp 22 including a section having a roughly U-shape configuration, made of, for example, a synthetic resin material, and has two claw pieces (not shown) opposing each other. When this clamp 22 is slid in the longitudinal direction of the pair of blockading fasteners 18, the claw pieces (not shown) push and pressurize the male half-member 18a and the female half-member 18b of the pair of blockading fasteners 18, and the two convex portions 20a and the two concave portions 20a are occluded. As a result, the opening 14 of the storage bag main body 12 is blockaded by the blockading fastener 18 more easily and reliably.

[0031] In the compression storage bag 10 according to this preferred embodiment, there is also, for example, one non-return valve 24 arranged and installed on one side in the width-wise direction of the storage bag main body 12, and also at the approximate central portion in the longitudinal direction of the storage bag main body 12. This non-return valve 24 has an inner valve portion 26A arranged inside the storage bag main body 12, and an outer valve portion 26b communicatively connected to the inner valve portion 26A, and arranged outside the storage bag main body 12. In this case, the non-return valve 24 is preferably made of a synthetic resin material that has, for example, a flat tubular form. The non-return valve 24 is also arranged and installed, so that its one end in the longitudinal direction extends to the interior of the storage bag main body 12, and its other end in the longitudinal direction extends to the exterior of the storage bag main body 12. The inner valve portion 26A and the outer valve portion 26B communicatively connect the interior and the exterior of the storage bag main body 12 through the intervention of the opening portion 24a and the opening portion 24b. The opening portion 24a and the opening portion 24b of the non-return valve 24 have a function of being the suction opening for causing the interior

of the storage bag main body **12** to be in a negative pressure state by sucking and removing air from the interior of the storage bag main body **12**.

[0032] One opening portion **24a** of this non-return valve **24** can be blocked and clogged, as appropriate, by a pair of blockading fasteners **28**, for example. The pair of blockading fasteners **28** has a construction that is roughly the same as the pair of blockading fasteners **18** mentioned above. In this case in particular, the blockading fasteners **28** of the non-return valve **24** include a male half-member provided with one convex portion, and a female half-member provided with one convex portion in comparison to the blockading fasteners **18** of the storage bag main body **12**.

[0033] The location of the non-return valve **24** is not limited to the location indicated in **FIGS. 1 and 2**. The non-return valve **24** can be arranged and installed, for example, on a portion on any other side of the storage bag main body **12** except the opening **14** side, or on a portion on one principle surface or the other principle surface of the storage bag main body **12**. The opening portion **24a** of the non-return valve **24** can be blocked and clogged by melt-adhering the circumference edge portion of the opening portion **24a** with heating appliances such as an iron, instead of the blockading and clogging method using the pair of blockading fasteners **28**.

[0034] In the compression storage bag **10** according to this preferred embodiment, a base member **30** of planar form is arranged inside the storage bag main body **12** in such a state that the base member **30** is easily inserted and removed as shown in **FIGS. 1 through 3**, for example. The base member **30** is rigid to some extent or has semi-rigidity. The base member **30** preferably has a substantially rectangular configuration, for example. There is also a bend line **32** for bending formed at the central portion in the width-wise direction of the base member **30** from one end to the other end in the longitudinal direction of the base member **30**. The base member **30** is formed so that it can be bent freely at the central portion in the width-wise direction at the bend line **32**. The base member **30** can have its shape formed according to the shape of the storage bag main body **12**, and can have a substantially rectangular shape, a substantially elliptical shape, or any other shape, for example. Moreover, the bend line **32** can be formed, for example, at the middle portion in the longitudinal direction of the base member **30**, and the arrangement and number of the bend lines **32** can be changed, as appropriate.

[0035] When the above-mentioned base member **30** is put inside the storage bag main body **12**, and particularly when the base portion B of the storage bag main body **12** has its shape retained, as shown in **FIG. 1**, and goods to be stored **100** such as beddings and clothes are stored inside, the whole storage bag main body **12** of the compression storage bag **10** reliably retains its shape, for example, a substantially rectangular shape, as particularly shown in **FIG. 3**. When, for example, a suction nozzle (not shown) of a vacuum cleaner is inserted into one opening portion **24b** of the non-return valve **24** in this state and a compression-storing operation is conducted, the compression storage bag **10A** together with the goods to be stored **100** is compressed to define a substantially rectangular shape, as particularly shown in **FIG. 4**.

[0036] When air inside the compression storage bag **10** is removed or suction-deaerated by suction-deaerating means

such as a vacuum cleaner, the interior of the compression storage bag **10** can be decompressed to a negative pressure state. At this point, the opening portion **24a** of the inner valve portion **26A** is hermetically sealed, because the inner surfaces of the inner valve portion **26A** of the non-return valve **24** closely adheres with each other. That is to say, the inner surfaces of the inner valve portion **26A** inside the storage bag main body **12** closely adheres with each other, because a force pushing and pressurizing the outer surface of the inner valve portion **26A** is generated by the pressure difference of ambient air between the interior and exterior of the storage bag main body **12**. As a result, inflow of outside air into the interior of the storage bag main body **12** is prevented.

[0037] As the negative pressure state inside the compression storage bag **10** due to the suction-deaerating operation is reached, the whole compression storage bag **10** is compressed, and correspondingly, the compression storage bag **10** and goods to be stored **100** such as beddings inside the compression storage bag **10** are compressed. As a result, the goods to be stored **100** inside the compression storage bag **10** are compression-stored in such a manner.

[0038] With the compression storage bag **10** according to this preferred embodiment, it is possible to erect and place the compression storage bag **10A** compressed together with the goods to be stored **100** in a perpendicular state with the base portion B of the storage bag main body **12**, which is supported by the base member **30**, becoming the surface contacting the ground. Therefore, it becomes possible to store this compression storage bag **10A** in a storage area within a storage location such as a closet in an erected state, as shown in **FIG. 4**. As a result, compression-storing of the goods to be stored **100** using the compression storage bag **10** according to preferred embodiments of the present invention significantly reduce planar storing space substantially in comparison with a planar pile-up storage using a conventional compression storage bag. Hence, an effective utilization of the storing space S can be pursued, and the applicable extent to which the compression storage bag **10A** after compression-storage can be accommodated and stored is broadened. Furthermore, the work required to store the compression storage bag **10A** after compression-storage into storing places such as closets is made easier.

[0039] The base member **30** according to a preferred embodiment of the present invention preferably includes a porous material such as activated carbon and porous ore. In this case, a paper compounded with, for example, about three percent (3%) of activated carbon and natural silica-alumina type mineral ore in the papermaking process, and pasted together to a sturdy paper, is used for the base member **30**. This activated carbon may be prepared by using raw material of coffee residue carbonized, and has a relatively uniform grain diameter.

[0040] With the compression storage bag **10** according to this preferred embodiment, gas and moisture can be absorbed by the absorbing effect of the activated carbon and porous ore, because the base member **30** includes a porous material such as activated carbon and porous ore. Therefore, this compression storage bag **10** is excellent in deodorizing characteristics and moisture-proof characteristics due to the effects of the base member **30**.

[0041] The porous material is not limited to the substances put in during the papermaking process, as mentioned above.

A porous material layer can be formed, for example, on a base material made of paper by coating or laminating or other suitable process. In this case, the base member **30** can activate the absorbing feature of porous material such as activated carbon and porous ore, because the base member **30** has the porous material layer.

[0042] Since the base member **30** is formed so that it can be bent along the bending line **32** in the compression storage bag **10** of this preferred embodiment, it is made easy to set the base member **30** on the base portion B inside the compression storage bag main body **12** by bending the base member **30**, when inserting the base member **30** inside the storage bag main body **12**.

[0043] With preferred embodiments of the present invention, a compression storage bag can be achieved, in which the operation to store and accommodate goods to be stored such as beddings and clothes after compression-storage is made easy, and which has a broad range of applicable storing and accommodating places.

[0044] While preferred embodiments of the invention have been described above, it is to be understood that variations and modifications will be apparent to those skilled in the art without departing the scope and spirit of the invention. The scope of the invention, therefore, is to be determined solely by the following claims.

What is claimed is:

1. A compression storage bag including a non-return valve made of a synthetic resin material on one portion of said compression storage bag, and a base member having a planar configuration and being disposed inside said compression storage bag in a state such that the base member is freely inserted and removed from the compression storage bag.

2. The compression storage bag according to claim 1, wherein said non-return valve includes an inner valve portion arranged inside said compression storage bag, and an outer valve portion communicatively connected to said inner valve portion and arranged outside of said compression storage bag.

3. The compression storage bag according to claim 2, wherein said non-return valve has a flat tubular shape.

4. The compression storage bag according to claim 1, wherein said base member is made of paper that is at least

semi-rigid, and is bendable at an intermediate portion in one of a longitudinal direction and a width-wise direction of said base member.

5. The compression storage bag according to claim 1, wherein said base member has a bend line extending in one of a longitudinal direction and a width-wise direction of said base member.

6. The compression storage bag according to claim 5, wherein said base member has a substantially rectangular, planar form, and said bend line is provided at an intermediate portion in the width-wise direction of said base member, and extends in the longitudinal direction of said base member.

7. The compression storage bag according to claim 1, wherein said base member includes a porous material including at least one of activated carbon and porous ore.

8. The compression storage bag according to claim 1, wherein said base member has a layer made of said porous material.

9. The compression storage bag according to claim 1, wherein the compression storage bag has a longitudinally oblong shape.

10. The compression storage bag according to claim 1, wherein the compression storage bag includes a storage bag main body made of a non-permeable laminated film.

11. The compression storage bag according to claim 1, further comprising an opening in the compression storage bag for inserting and removing goods to be stored in the compression storage bag.

12. The compression storage bag according to claim 11, further comprising a blockading member arranged to selectively close the opening.

13. The compression storage bag according to claim 12, wherein the blockading member includes a pair of blockading fasteners having a male half-member extending in the lateral direction of the storage bag main body and a female half-member arranged in occlusion with the male half-member.

14. The compression storage bag according to claim 13, further comprising a clamp arranged and installed on the pair of blockading fasteners.

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