



SEAL-FREE POUCH

FIELD OF THE INVENTION

[0001] The present invention relates to a seal-free pouch, in particular to a pouch using a feeding unit installed on a bag body for sealing the pouch without requiring any additional equipment or device.

BACKGROUND OF THE INVENTION

[0002] Traditionally, sealing a bag for storage can be divided into the following ways: zippering, buckling, sewing, thermoplastic sealing and screw capping, etc. The aforementioned prior arts are mainly divided into two types: using an external equipment to seal a bag by heat or using a machine to sew a seal opening of a bag, and adding a sealing device such as a zipper, a button, or a screw cap on a seal opening of the bag.

[0003] However, the aforementioned ways of sealing a bag still have drawbacks, such as requiring an additional equipment for sealing the bag, thus incurring a higher cost indirectly, and manufacturing a sealing device for the bag, thus increasing the complexity of manufacturing method and procedure.

SUMMARY OF THE INVENTION

[0004] In view of the aforementioned shortcomings of the prior art, the inventor of the present invention based on years of experience in the related industry to conduct extensive researches and experiments, and finally developed a seal-free pouch and a method of sealing the seal-free pouch in accordance with the present invention to achieve the effects of saving cost and using the seal-free pouch repeatedly for the environmental protection purpose.

[0005] Therefore, it is a primary objective of the present invention to provide a seal-free pouch that uses a feeding unit integrated with a bag body to seal the pouch without requiring any additional equipment or device, but simply storing the feeding unit into the bag body in a direction to limit a substance (or injectant) injected inside the bag body.

[0006] Another objective of the present invention is to provide a seal-free pouch having a plurality of frictional areas formed on a side of the bag body for changing the of the bag body coefficient of friction, in addition to limiting the injectant in the bag body by the feeding unit, such that when the plurality of bag



bodies are stacked, the seal-free pouches can be stacked more securely.

[0007] In a preferred embodiment, the present invention provides a seal-free pouch, comprising a bag body, a tear and a feeding unit. The bag body is used for forming a first accommodating space. The tear is interconnected with the first accommodating space. The feeding unit includes a protrusion disposed on a side of the tear for partitioning the tear to form a second accommodating space and a third accommodating space, wherein the second accommodating space is interconnected with the tear, but the third accommodating space is not interconnected with the tear. When the protrusion of the feeding unit is folded into halves along the third accommodating space, the first accommodating space is limited and interconnected with the exterior of the seal-free pouch through the second accommodating space.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Fig. 1 is a schematic view of a seal-free pouch in accordance with a preferred embodiment of the present invention;

[0009] Fig. 2 is a perspective view of a seal-free pouch in accordance with a preferred embodiment of the present invention;

[0010] Fig. 3 is a schematic view of feeding materials into a seal-free pouch in accordance with a preferred embodiment of the present invention;

[0011] Fig. 4 is a cross-sectional view of Section A-A' of Fig. 3;

[0012] Fig. 5 is a schematic view of folding a seal-free pouch into halves in accordance with a preferred embodiment of the present invention;

[0013] Fig. 6 is a schematic view showing movements of sealing a seal-free pouch in accordance with a preferred embodiment of the present invention;

[0014] Fig. 7 is a schematic view of a seal-free pouch in accordance with a preferred embodiment of the present invention;

[0015] Fig. 8 is an enlarged view of a feeding unit as depicted in Fig. 7;

[0016] Fig. 9 is a schematic view of stacking seal-free pouches in accordance with a preferred embodiment of the present invention;

[0017] Fig. 10 is a schematic view of a seal-free pouch in accordance with a preferred embodiment of the present invention; and

[0018] Fig. 11 is a schematic view of a seal-free pouch in accordance with a preferred embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings.

[0020] With reference to Fig. 1 for a schematic view of a seal-free pouch in accordance with a preferred embodiment of the present invention, the seal-free pouch 100 comprises a bag body 102, a tear 104, and a feeding unit 106. The bag body 102 is used to form a first accommodating space 1022 for storing an external injectant 110 in a solid, liquid or gas state. Preferably, the first accommodating space 1022 is used for storing particulate/powder cereals, organic fertilizers, organic soils or feeds, etc. The tear 104 is interconnected with the first accommodating space 1022 and provided for injecting an external injectant 110 into the first accommodating space 1022. In addition, the injectant 110 stored in the first accommodating space 1022 can be discharged from the interior of the first accommodating space 1022 to the outside through the tear 104. The feeding unit 106 includes a protrusion 1062 disposed on a side of the tear 104 for partitioning the tear 104 to form a second accommodating space and a third accommodating space. The second accommodating space is interconnected to the tear 104, but the third accommodating space is not interconnected to the tear 104, and both are described later. In addition, when the protrusion 1062 of the feeding unit 106 is folded along a folding line 1064, the first accommodating space is limited and interconnected to the exterior of the seal-free pouch through the second accommodating space, and the details are described as follows.

[0021] With reference to Fig. 2 for a perspective view of a seal-free pouch in accordance with a preferred embodiment of the present invention, the seal-free pouch 200 comprises a bag body 202, a tear 204, a feeding unit 206 and a frictional area 208. The bag body 202 is used for forming a first accommodating space 2022. In general, the bag body 202 is in a quadrilateral shape (such as a square, rectangular, or trapezoid shape) or any other shape. In this preferred embodiment, the bag body is in the quadrilateral shape, and connecting portions on four sides of the bag body 202 are formed selectively by sealing and attaching method or formed integrally. Preferably, one of the connecting portions of the

bag body 202 is used for injecting or discharging an injectant 210 into or out of the first accommodating space 2022. Preferably, the tear 204 (or a feeding inlet/outlet) is formed on the connecting portion, such that the first accommodating space 2022 is interconnected with the tear 204 and provided for facilitating a discharge of the injectant 210 stored in the first accommodating space 2022 from the first accommodating space 2022 or an injection of an external injectant 210 into the first accommodating space 2022. For example, the tear 204 is formed by directly cutting the bag body 202. The feeding unit 206 is attached or integrally formed on a side of the tear 204, and the feeding unit 206 includes a protrusion 2062 protruded from the bag body 202, such that the external injectant 210 can enter into the first accommodating space 2022 easily, and the height of the protrusion 2062 is HA. In addition, the feeding unit 206 also forms a second accommodating space 2066 and a third accommodating space 2068 with a height of HB. The second accommodating space 2066 is interconnected with the tear 204, such that the injectant 210 inside the first accommodating space 2022 can be interconnected to the exterior of the seal-free pouch through the second accommodating space 2066 or the external injectant 210 can be interconnected with the interior of the first accommodating space 2022 through the second accommodating space 2066. Particularly, the third accommodating space 2068 is not interconnected with the tear 204. Preferably, the protrusion 2062 of the feeding unit 206 can be folded into halves along the third accommodating space 2068 and inserted into the third accommodating space 2068 to complete sealing the sealing-free pouch. The frictional areas 208 are provided for changing the coefficient of friction of the bag body 202, such that when a plurality of bag bodies are stacked, the static friction between the bag bodies can be maximized as shown in Fig. 9, wherein the seal-free pouch 500 includes a feeding unit 502 and a plurality of frictional areas 504. For example, the frictional areas 208 are in a form of rough-surface layers, stripes or blocks, or the frictional areas are in a form of surfaces, stripes or blocks having a plurality of slightly protruding bumps formed thereon.

[0022] It is noteworthy to point out that the protruding height HA of the protrusion 2062 falls in an acceptable range as long as the protrusion 2062 can be folded and inserted into the third accommodating space 2068 easily, and HA is set according to actual requirements. In this preferred embodiment, the height HA of the protrusion 2062 is equal to the height HB of the second

accommodating space 2066 and the third accommodating space 2068, or the width of the protrusion 2062 of the feeding unit 206 is slightly greater than the width of the tear 204 as shown in Fig. 10, wherein the seal-free pouch 600 comprises a bag body 602, a tear 604, a feeding unit 606 and a frictional area 608, and the width W2 of the protrusion 6062 of the feeding unit 606 is slightly greater than the width W1 of the tear 604.

[0023] In addition, the feeding unit 206 further includes a pre-formed folding line 2064 pressed among the protrusion 2062, the second accommodating space 2066 and the third accommodating space 2068 for facilitating a seal-free packaging process. The bag body 202 further includes a plurality of folding lines 2024 provided for pressing a three-dimensional seal-free pouch 200 into a flat bag body 202, such that the bag body 202 can be transported, carried and stored easily before the injectant is filled.

[0024] With reference to Fig. 3 for a schematic view of feeding materials into a seal-free pouch in accordance with a preferred embodiment of the present invention, the process of injecting materials into the seal-free pouch is carried out by an external feeding injector 310, wherein the injectant 320 is injected into the first accommodating space 302 of the seal-free pouch 300 through an injection end 312 of the feeding injector 310. Preferably, the injection end 312 is inserted into the second accommodating space 3062 of the feeding unit 306 of the seal-free pouch 300 and interconnected with the tear 304 through the second accommodating space 3062, such that the injectant 320 can enter into the first accommodating space 302.

[0025] With reference to Fig. 4 for a cross-sectional view of Section A-A' of Fig. 3, we can observe from the cross-section A-A' of the seal-free pouch in accordance with this preferred embodiment that the injection end 312 of the feeding injector is extended into the protrusion 3066 of the feeding unit 306 first, and then into the second accommodating space 3062 interconnected with the protrusion 3066, and finally into the first accommodating space 302 through the tear 304. In addition, the feeding unit 306 further includes a third accommodating space 3064 for sealing the seal-free pouch. The free-seal pouch is sealed after the injectant 320 is injected from the feeding injector 310 completely and the injection end 312 situated at the feeding unit 306 is removed, and then the protrusion 3066 of the feeding unit 306 is folded into halves along

the direction of the third accommodating space 3064 to limit the first accommodating space 302 to be interconnected with the exterior of the seal-free pouch 300 through the second accommodating space 3062 as shown in Fig. 5. Finally, the seal-free pouch can be sealed as shown in Fig. 6. In this preferred embodiment, the seal-free pouch 300 can be sealed without requiring any additional tool or device.

[0026] With reference to Fig. 7 for a schematic view of a seal-free pouch in accordance with a preferred embodiment of the present invention, the seal-free pouch 400 having the feeding unit 404 can be turned over, such that the feeding unit 404 faces downward and touches the ground G. Preferably, the injectant 406 can be sealed inside the first accommodating space 402 of the seal-free pouch 400 by applying a press-down force F onto the feeding unit 404, such that the seal-free pouch 400 can have a better sealing effect, such that the injectant 404 will not be leaked from the feeding unit 404 to the outside of the seal-free pouch 400 easily. With reference to Fig. 8 for an enlarged view of the feeding unit 404.

[0027] With reference to Fig. 11 for a schematic view of a seal-free pouch in accordance with a preferred embodiment of the present invention, the seal-free pouch 700 further includes a first auxiliary device 702 installed on the bag body or a second auxiliary device 704 installed at the feeding unit to assure the feeding unit of the seal-free pouch 700 to be sealed securely. For instance, the first auxiliary device 702 and the second auxiliary device 704 can be adhesive tapes, buckles or Velcro tapes.

[0028] While the invention has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of the invention set forth in the claims.

What is Claimed is:

1. A seal-free pouch, comprising:
a bag body, for forming a first accommodating space ;
at least one tear, interconnected with the first accommodating space; and
at least one feeding unit, having at least one protrusion, and installed on a side of the tear, for partitioning the tear to form a second accommodating space and a third accommodating space, wherein the second accommodating space is interconnected with the tear, but the third accommodating space is not interconnected with the tear;
thereby, if the protrusion of the feeding unit is folded into halves along the third accommodating space, the first accommodating space will be limited and interconnected to an exterior of the seal-free pouch through the second accommodating space.
2. The seal-free pouch of claim 1, wherein the bag body includes a plurality of frictional areas disposed on a side of the bag body for changing the coefficient of friction of the bag body.
3. The seal-free pouch of claim 1, wherein at least one protrusion has a width equal to the width of at least one tear.
4. The seal-free pouch of claim 1, wherein at least one protrusion has a width equal to the width of at least one tear.
5. The seal-free pouch of claim 1, wherein at least one feeding unit is formed integrally or independently with the bag body.
6. The seal-free pouch of claim 1, wherein the bag body is in an arbitrary shape.
7. The seal-free pouch of claim 1, further comprising a first auxiliary device installed at the bag body for assisting sealing the feeding unit.
8. The seal-free pouch of claim 1, further comprising a second auxiliary device installed at the feeding unit for assisting sealing the feeding unit.