

DESCRIPTION

BLISTER PACKAGING MACHINE, BLISTER PACK MANUFACTURING METHOD, AND BLISTER PACK

Technical Field

[0001]

The present invention relates to a blister pack accommodating a predetermined content, a blister packaging machine that manufactures a blister pack, and a method for manufacturing the blister pack.

Background Art

[0002]

The blister pack includes a container including a pocket in which various contents are accommodated and a cover attached to the container so as to seal an opening side of the pocket. The blister pack is manufactured by a blister packaging machine including various means such as pocket forming means for forming the pocket.

[0003]

A package in which a chamber (room) is formed between a bag-shaped filter in a cup-type container and the cup-type container is known as a kind of package such as a blister pack. The package includes the cup-type container that accommodates the bag-shaped filter while an opening-side outer peripheral portion of the bag-shaped filter is

attached to an opening-side inner peripheral portion (sidewall) of the cup-type container and a cover that is attached to the cup-type container so as to close both the openings of the bag-shaped filter and the cup-type container (e.g., refer to Patent Literature 1). In the package, coffee powder (for example, ground coffee or powder extract) is accommodated in the bag-shaped filter, and when the packaging body is used, a tubular injection probe breaks through the cover and is placed in the bag-shaped filter, and a tubular discharge probe is disposed in the chamber by bursting through a bottom of the cup-type container. When hot water is supplied into the bag-shaped filter through the injection probe, coffee is extracted into the chamber through the bag-shaped filter, and sent out of the chamber through the discharge probe.

[0004]

In the above Patent Literature, the package is manufactured through the following process. That is, a bag-shaped filter is produced by bending or welding a belt-shaped filter material that can be thermally welded. Subsequently, the opening of the bag-shaped filter is put in an expanded state after the bag-shaped filter is disposed in a previously-manufactured cup-type container. Subsequently, an opening-side outer peripheral portion of the bag-shaped filter and an opening-side inner peripheral

portion of the cup-type container are welded together.
Finally, after supplying coffee powder to the bag-shaped filter, the package is manufactured by closing the opening of the cup-type container or the like using a cover.

Citation List

Patent Literature

[0005]

Patent Literature 1: JP 2002-18213 A

Summary of Invention

Technical Problem

[0006]

However, in the above manufacturing method, it is necessary to separately perform the process of welding the bag-shaped filter and the cup-type container and the process of closing the opening of the cup-shaped container or the like using the cover. Thus, a relatively large number of processes are required for manufacturing the package, and it is difficult to say that the production efficiency is good.

[0007]

In the configuration that welds the opening-side outer peripheral portion of the bag-shaped filter, and the opening-side inner peripheral portion of the cup-shaped

container, there is a risk of easily generating peeling in a welding part of the bag-shaped filter. When the peeling is generated in the bag-shaped filter, a coffee powder accommodation space in the bag-shaped filter and the chamber communicate with each other through the peeling portion in the cup-shaped container, and there is a risk of generating various problems (for example, the coffee powder enters the chamber through the peeling portion).

[0008]

The present invention has been made in view of the above circumstances, and an object of the present invention is to solve the above problems, for example, to provide a blister packaging machine that can efficiently and rapidly manufacture the blister pack having the same configuration as the above package.

Solution to Problem

[0009]

Each means suitable for solving the above object will be described below in terms of items. An effect peculiar to the corresponding means will be added as needed.

[0010]

Means 1. A blister packaging machine that manufactures a blister pack, the blister pack including:

an inside container including an inside pocket

accommodating a predetermined content;

an outside container including an outside pocket
accommodating the inside pocket; and

a cover provided so as to close openings of the inside
pocket and the outside pocket in a state in which the
content is accommodated in the inside pocket while the
inside pocket is accommodated in the outside pocket,

a predetermined chamber being formed between the inside
pocket in the outside pocket and the outside pocket,

the blister packaging machine including:

supply means for supplying the content to the inside
pocket formed in a belt-shaped inside container film to be
conveyed;

sealing means provided downstream of the supply means
according to a position where conveying paths of the inside
container film and a belt-shaped outside container film to
be conveyed, the sealing means obtaining a belt-shaped
blister film including the inside container film, the
outside container film, and a belt-shaped cover film by
closing the openings of the inside pocket and the outside
pocket using the cover film to seal an insides of the
inside and outside pockets; and

punching means for punching the blister film on a
downstream side of the sealing means,

wherein the sealing means heats an overlapping portion

of an outside flange corresponding unit protruding outward from an opening end of the outside pocket in the outside container film, an inside flange corresponding unit protruding outward from an opening end of the inside pocket in the inside container film, and the cover film, and welds the inside flange corresponding unit and the cover film to the outside flange corresponding unit.

[0011]

In the means 1, the inside container film (inside container material) in which the inside pocket is formed and the outside container film (outside container material) in which the outside pocket is formed overlap each other when reaching the sealing means at the latest. The sealing means closes the openings of the inside and outside pockets using the cover film that becomes the cover material while the inside pocket is accommodated in the outside pocket. Subsequently, the belt-shaped blister film made of each of the inside and outside container films is punched by the punching means to obtain the blister pack in which a content accommodation space and a chamber (room) are formed in the outside pocket.

[0012]

At this point, in the means 1, the sealing means heats the overlapping portion of the outside flange corresponding unit, the inside flange corresponding unit, and the cover

film to weld the inside flange corresponding unit and the cover film to the outside flange corresponding unit. That is, the sealing means simultaneously welds the inside container and the cover to the outside container. Thus, the process of attaching the outside container and the inside container and the process of closing the openings of the outside container and the like using the cover can simultaneously be performed. Consequently, the blister pack having a special shape including the accommodation space for the content and the chamber can efficiently be manufactured at high speed in the outside container, and the production efficiency can be improved.

[0013]

Furthermore, in the means 1, while the inside container and the outside container are manufactured from the container films constituting the material, the blister pack can be obtained by combining the inside container and the outside container. Thus, unlike the prior art, it is not necessary to perform a process of manufacturing a container (for example, the cup-type container in the prior art) constituting a part of the blister pack and supplying (conveying) the container to the manufacturing machine. Consequently, time and labor can be reduced in manufacturing the blister pack, and the blister pack can more efficiently be manufactured at higher speed. As a

result, the production efficiency can further be improved.

[0014]

Furthermore, in the means 1, in the manufactured blister pack, the inside flange (the part including the inside flange corresponding unit) of the inside container is sandwiched and fixed by the outside flange (the part including the outside flange corresponding unit) of the outside container and the cover. Thus, the inside container can stably be fixed to the outside container, and the inside container can more certainly be prevented from peeling off from the outside container.

[0015]

Means 2. The blister packaging machine described in the means 1, further including pocket forming means for forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film on an upstream side of the sealing means,

wherein the inside container film has air permeability, and

the pocket forming means includes:

inside pocket forming means for deforming the inside and outside container films by pressing the inside and outside container films in an overlapping state, forming the inside pocket in the inside container film, and forming a temporary outside pocket having a shape substantially

identical to that of the inside pocket in the outside container film; and

outside pocket forming means for performing at least one of supply of gas to the temporary outside pocket through the inside container film and suction of the temporary outside pocket onto an opposite side to the inside pocket, expanding the temporary outside pocket to bring the temporary outside pocket into close contact with a recessed mold including a recess having a shape corresponding to the outside pocket, and forming the outside pocket in the outside container film.

[0016]

In the means 2, the inside pocket and the outside pocket are formed by the pocket forming means. Thus, the blister packaging machine can be simplified as compared with the case where the means for forming each pocket is separately provided.

[0017]

The pocket forming means forms the inside pocket and the temporary outside pocket using the inside pocket forming means, and finally forms the outside pocket by expanding the temporary outside pocket using the outside pocket forming means. At this point, the inside pocket forming means is basically used to form the inside pocket with respect to the inside container film, and not only the

inside pocket but also the temporary outside pocket are simultaneously formed with respect to the outside container film (that is, a gas supply space or a part that becomes a suction object). Using air permeability of the inside container film, the temporary outside pocket is expanded by the supply of gas or the suction of the temporary outside pocket to form the outside pocket, and therefore the chamber is formed by separating the inside pocket and the outside pocket.

[0018]

As described above, in the means 2, the outside pocket and the chamber can be formed by a relatively simple technique by effectively using the air permeability of the inside container film. Consequently, the production efficiency can further be improved. Furthermore, in the means 2, the temporary outside pocket can simultaneously be formed in forming the inside pocket without providing a special process of forming the temporary outside pocket. Thus, the production efficiency can further be improved.

[0019]

Means 3. The blister packaging machine described in the means 2, wherein the inside pocket forming means is configured to be heatable, and configured to be disposed in the recess when the inside and outside container films are pressed, and

the outside pocket forming means is configured to expand the temporary outside pocket while the inside pocket forming means is disposed in the recess to support the inside pocket.

[0020]

In the means 3, by pressing the inside container film using the heated inside pocket forming means, the inside pocket can be heated and stretched to fix the shape of the inside pocket. Thus, the shape of the inside pocket can more certainly be kept constant, and the content can more certainly and stably be accommodated in the inside pocket. Because contraction and deformation of the inside pocket can be prevented even if a high-temperature object such as hot water contacts with the inside pocket, the blister pack can be used as a cartridge of a hot drink such as coffee and tea, and the use of the blister pack can further be expanded.

[0021]

Furthermore, in the means 3, after the inside and outside container films are pressed by the inside pocket forming means, the process of expanding the temporary outside pocket is performed while the inside pocket is supported by the inside pocket forming means. Consequently, the deformation of the inside pocket due to an air flow and the like can be prevented in expanding the temporary

outside pocket, and the inside pocket can more certainly be formed into a target shape.

[0022]

Means 4. The blister packaging machine described in the means 1, further including pocket forming means for forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film on an upstream side of the sealing means,

wherein the inside container film has air permeability, and

the pocket forming means includes:

inside pocket forming means for deforming the inside and outside container films by pressing the inside and outside container films in an overlapping state, forming a predetermined temporary inside pocket in the inside container film, and forming a temporary outside pocket having a shape substantially identical to that of the temporary inside pocket in the outside container film; and

outside pocket forming means for performing at least one of supply of gas to the temporary outside pocket through the inside container film and suction of the temporary outside pocket onto an opposite side to the temporary inside pocket, expanding the temporary outside pocket to bring the temporary outside pocket into close contact with a recessed mold including a recess having a

shape corresponding to the outside pocket, and forming the outside pocket in the outside container film, and

the inside pocket is formed in the inside container film by pressing the temporary inside pocket using the inside pocket forming means after the formation of the outside pocket.

[0023]

In the means 4, basically the same effects as the means 2 are obtained.

[0024]

Additionally, in the means 4, the inside pocket is finally formed after the outside pocket is formed. Thus, the inside pocket can more certainly formed into a desired shape.

[0025]

Means 5. The blister packaging machine described in any one of the means 2 to 4, further including heating means for simultaneously heating the outside container film and the inside container film in the overlapping state before the inside pocket forming means presses the inside and outside container films.

[0026]

In the means 5, the inside and outside container films are heated before pressed by the inside pocket forming means, so that the inside pocket and the outside pocket can

more easily be formed by the inside pocket forming means or the outside pocket forming means. The inside and outside container films are simultaneously heated by the heating means, so that the machine can be further simplified and miniaturized as compared with the case where the heating means is separately provided for each container film.

[0027]

Means 6. The blister packaging machine described in any one of the means 1 to 5, wherein the inside container film is a nonwoven fabric made of a thermoplastic resin material.

[0028]

In the means 6, the inside container film is the nonwoven fabric, so that the sufficient air permeability can be given to the whole region of the inside container film. Thus, the temporary outside pocket can more certainly be expanded during the supply of the gas or the suction of the temporary outside pocket, and a formation mistake of the outside pocket can effectively be prevented.

[0029]

Furthermore, the inside container film has a large surface area, so that the inside container film can firmly be fixed to the outside container film and the cover film. As a result, good sealing performance can be achieved in the obtained blister pack.

[0030]

Means 7. The blister packaging machine described in any one of the means 1 to 6, further including preliminary welding means for welding the inside flange corresponding unit and the outside flange corresponding unit on the upstream side of the sealing means.

[0031]

In the means 7, before the cover film is welded, the inside flange corresponding unit and the outside flange corresponding unit are welded by the preliminary welding means. Thus, the inside and outside flange corresponding units and the cover film can more firmly be fixed in the blister film obtained through the sealing means. As a result, the extremely good sealing performance can be achieved in the obtained blister pack.

[0032]

Means 8. A method for manufacturing a blister pack, the blister pack including:

- an inside container including an inside pocket accommodating a predetermined content;

- an outside container including an outside pocket accommodating the inside pocket; and

- a cover provided so as to close openings of the inside pocket and the outside pocket in a state in which the content is accommodated in the inside pocket while the inside pocket is accommodated in the outside pocket,

a predetermined chamber being formed between the inside pocket in the outside pocket and the outside pocket,

the blister pack manufacturing method including:

a supply step of supplying the content to the inside pocket formed in a belt-shaped inside container film to be conveyed;

a sealing step of obtaining a belt-shaped blister film including the inside container film, a belt-shaped outside container film to be conveyed, and a belt-shaped cover film by closing the openings of the inside pocket and the outside pocket using the cover film to seal an insides of the inside and outside pockets in a state in which the inside pocket is accommodated in the outside pocket formed in the outside container film while the inside container film and the outside container film overlap each other after the supply step; and

a punching step of punching the blister film after the sealing step,

wherein in the sealing step, an overlapping portion of an outside flange corresponding unit protruding outward from an opening end of the outside pocket in the outside container film, an inside flange corresponding unit protruding outward from an opening end of the inside pocket in the inside container film, and the cover film is heated to welds the inside flange corresponding unit and the cover

film to the outside flange corresponding unit.

[0033]

In the means 8, the same effects as the means 1 are obtained.

[0034]

Means 9. The blister pack manufacturing method described in the means 8, further including a pocket forming step of forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film before the sealing step,

wherein the inside container film has air permeability, and

the pocket forming step includes:

an inside pocket forming step of deforming the inside and outside container films by pressing the inside and outside container films in an overlapping state, forming the inside pocket in the inside container film, and forming a temporary outside pocket having a shape substantially identical to that of the inside pocket in the outside container film; and

an outside pocket forming step of performing at least one of supply of gas to the temporary outside pocket through the inside container film and suction of the temporary outside pocket onto an opposite side to the

inside pocket, expanding the temporary outside pocket to bring the temporary outside pocket into close contact with a recessed mold including a recess having a shape corresponding to the outside pocket, and forming the outside pocket in the outside container film.

[0035]

In the means 9, the same effects as the means 2 are obtained.

[0036]

Means 10. The blister pack manufacturing method described in the means 9, wherein in the inside pocket forming step, the inside and outside container films are pressed by inside pocket forming means that can be heated, and the inside pocket forming means is disposed in the recess when the inside and outside container films are pressed, and

in the outside pocket forming step, the temporary outside pocket is expanded while the inside pocket forming means is disposed in the recess to support the inside pocket.

[0037]

In the means 10, the same effects as the means 3 are obtained.

[0038]

Means 11. The blister pack manufacturing method

described in the means 8, further including a pocket forming step of forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film before the sealing step,

wherein the inside container film has air permeability, and

the pocket forming step includes:

a temporary pocket forming step of deforming the inside and outside container films by pressing the inside and outside container films in an overlapping state, forming a predetermined temporary inside pocket in the inside container film, and forming a temporary outside pocket having a shape substantially identical to that of the temporary inside pocket in the outside container film;

an outside pocket forming step of performing at least one of supply of gas to the temporary outside pocket through the inside container film and suction of the temporary outside pocket onto an opposite side to the temporary inside pocket, expanding the temporary outside pocket to bring the temporary outside pocket into close contact with a recessed mold including a recess having a shape corresponding to the outside pocket, and forming the outside pocket in the outside container film: and

an inside pocket forming step of forming the inside

pocket in the inside container film by pressing the temporary inside pocket using the inside pocket forming means after the outside pocket forming step.

[0039]

In the means 11, the same effects as the means 4 are obtained.

[0040]

Means 12. The blister pack manufacturing device described in any one of the means 9 to 11, further including a heating step of simultaneously heating the outside container film and the inside container film in the overlapping state before the both container films are pressed and deformed.

[0041]

In the means 12, the same effects as the means 5 are obtained.

[0042]

Means 13. The blister pack manufacturing method described in any one of the means 8 to 12, wherein the inside container film is a nonwoven fabric made of a thermoplastic resin.

[0043]

In the means 13, the same effects as the means 6 are obtained.

[0044]

Means 14. The blister pack manufacturing method described in any one of the claims 8 to 13, further including a preliminary welding step of welding the inside flange corresponding unit and the outside flange corresponding unit before the sealing step.

[0045]

In the means 14, the same effects as the means 7 are obtained.

[0046]

Means 15. A blister pack including:

an inside container including an inside pocket accommodating a predetermined content;

an outside container including an outside pocket accommodating the inside pocket; and

a cover provided so as to close openings of the inside pocket and the outside pocket in a state in which the content is accommodated in the inside pocket while the inside pocket is accommodated in the outside pocket,

wherein a predetermined chamber is formed between the inside pocket in the outside pocket and the outside pocket,

the inside container includes an inside flange protruding outward from an opening end of the inside pocket,

the outside container includes an outside flange protruding outward from an open end of the outside pocket, and

the inside flange and the cover are welded to the outside flange.

[0047]

In the means 15, the blister pack is configured such that the inside flange and the cover are welded to the outside flange. Thus, the inside container and the cover can simultaneously be welded to the outside container, and the process of attaching the outside container and the inside container and the process of closing the opening of the outside container using the cover can simultaneously be performed. As a result, the blister pack can efficiently be manufactured at high speed, and the production efficiency can be improved.

[0048]

Furthermore, in the means 15, the inside flange is sandwiched and fixed by the outside flange and the cover. Thus, the inside flange can more firmly be attached to the outside container, and the inside container can more certainly be prevented from peeling off from the outside container.

Brief Description of Drawings

[0049]

Fig. 1 is a perspective view of a blister pack.

Fig. 2 is a sectional view of the blister pack.

Fig. 3 is a partially broken perspective view of a blister film.

Fig. 4 is a partially broken perspective view illustrating an outside container film and an inside container film subjected to a pocket forming process.

Fig. 5 is a schematic diagram illustrating a schematic configuration of a blister packaging machine.

Fig. 6 is a flowchart illustrating a blister pack manufacturing process.

Fig. 7 is a sectional schematic diagram of a pocket forming device and the like in an inside pocket forming process.

Fig. 8 is a sectional schematic diagram of the pocket forming device and the like in an outside pocket forming process.

Fig. 9 is a sectional schematic diagram of the pocket forming device and the like in an outside pocket forming process in another embodiment.

Fig. 10 is a sectional schematic diagram of the pocket forming device and the like in a temporary pocket forming process in another embodiment.

Fig. 11 is a sectional schematic diagram of the pocket forming device and the like in an outside pocket forming process in another embodiment.

Fig. 12 is a sectional schematic diagram of the pocket

forming device and the like in an inside pocket forming process in another embodiment.

Fig. 13 is a flowchart illustrating a pocket forming process in another embodiment.

Description of Embodiment

[0050]

Hereinafter, an embodiment will be described with reference to the drawings. As illustrated in Figs. 1 and 2, a blister pack 1 includes an outside container 2, an inside container 3, and a cover 4. In Fig. 1 and the like, for convenience, the outside container 2 and the like are illustrated to be thicker than actual.

[0051]

The outside container 2 is made of a thermoplastic resin material such as PP (polypropylene), PVC (polyvinyl chloride), and PE (polyethylene), and does not substantially have the air permeability. The outside container 2 includes an outside pocket 2a having a bottomed cylindrical shape and an annular outside flange 2b protruding outward from an opening end of the outside pocket 2a.

[0052]

The inside container 3 is formed by a nonwoven fabric made of a thermoplastic resin compatible with the outside

container 2, and has the sufficient air permeability. The inside container 3 includes an inside pocket 3a accommodating a predetermined content C (for example, coffee powder) and an annular inside flange 3b protruding outward from the opening end of the inside pocket 3a. The inside pocket 3a is accommodated in the outside pocket 2a, and the inside flange 3b is welded to the outside flange 2b.

[0053]

A depth of the outside pocket 2a is sufficiently larger than a depth of the inside pocket 3a. Consequently, a sufficiently wide chamber H is formed between the inside pocket 3a and the outside pocket 2a in the outside pocket 2a.

[0054]

The cover 4 is made of a thermoplastic resin compatible with the outside container 2 and the inside container 3. The cover 4 may be made of a thin material (for example, aluminum foil) on which a sealant made of a thermoplastic resin compatible with the outside container 2 or the like is applied. The cover 4 is welded to the outside flange 2b together with the inside flange 3b, and seals the insides of the pockets 2a, 3a while closing the openings of the pockets 2a, 3a.

[0055]

The blister pack 1 is manufactured by punching a belt-

shaped blister film 11 (see Fig. 3). The blister film 11 includes a belt-shaped outside container film 12 that is a material for the outside container 2, a belt-shaped inside container film 13 that is a material for the inside container 3, and a belt-shaped cover film 14 that is a material for the cover 4.

[0056]

A configuration of a blister packaging machine 20 that manufactures the blister pack 1 will be described below.

[0057]

As illustrated in Fig. 5, an outside container film original fabric 22 in which the outside container film 12 is wound in a roll shape and an inside container film original fabric 23 in which the inside container film 13 is wound in a roll shape are provided at an uppermost stream of the blister packaging machine 20. The container films 12, 13 drawn from the original fabrics 22, 23 are intermittently conveyed downstream by predetermined conveying means (not illustrated). The container films 12, 13 are configured to be conveyed from a predetermined position along the same conveying path, and reach a heating device 25 as the heating means while overlapping each other.

[0058]

The heating device 25 includes an upper mold 25a and a lower mold 25b that are vertically disposed so as to

sandwich the container films 12, 13, and can partially heat formation ranges of the pockets 2a, 3a in the container films 12, 13.

[0059]

The container films 12, 13 passing through the heating device 25 are conveyed to a pocket forming device 26 as the pocket forming means. In the pocket forming device 26, the container films 12, 13 that are heated and softened are deformed, whereby the outside pocket 2a is formed in the outside container film 12 while the inside pocket 3a is formed in the inside container film 13. The pocket forming device 26 includes an air supply device 261 as the outside pocket forming means, an upper mold 262 disposed at a position sandwiching the container films 12, 13, and a lower mold 263 as the recessed mold.

[0060]

For example, the air supply device 261 is a compressor. The air supply device 261 supplies a predetermined gas (inert gas, air in the embodiment) to a heating guide 262b (to be described below) of the upper mold 262. A type of the gas supplied from the air supply device 261 may be changed as appropriate.

[0061]

The upper mold 262 is disposed above the conveying path of the container films 12, 13, and can reciprocate between

a pressing position approaching the container films 12, 13 and a retractable position separating from the container films 12, 13 by the driving means (not illustrated). As illustrated in Fig. 7, the upper mold 262 includes a rod-shaped plug 262a as the inside pocket forming means, the plug 262a including a leading end surface having substantially the same shape as a bottom shape of the inside pocket 3a, and a heating guide 262b disposed in an outer periphery of the plug 262a. The plug 262a and the heating guide 262b can be heated by a heater or the like (not illustrated).

[0062]

The plug 262a can reciprocate between a protruding position that protrudes from a lower surface of the heating guide 262b to presses and deform the container films 12, 13 and a sinking position that does not protrude from the lower surface of the heating guide 262b. The movement of the plug 262a is guided by the heating guide 262b.

[0063]

A cylindrical space 262c that is open toward a conveying path side of the container films 12, 13 is formed between the outer peripheral surface of the plug 262a and the heating guide 262b. The gas supplied from the air supply device 261 to the heating guide 262b is sent into the space 262c through the heating guide 262b.

[0064]

The lower mold 263 is disposed below the conveying path of the container films 12, 13, and can reciprocate between the approach position approaching the container films 12, 13 and the retractable position separating from container films 12, 13 by driving means (not illustrated). The lower mold 263 includes a recess 263a that is open toward the conveying path side of the container films 12, 13 and has a shape corresponding to the outside pocket 2a. A vent hole (not illustrated) communicates the outside of the lower mold 263 and the recess 263a is provided in the lower mold 263, and the gas in the recess 263a can be discharged to the outside through the vent hole.

[0065]

The pocket forming device 26 having the above configuration forms the outside pocket 2a and the inside pocket 3a during an interval between conveying operations of the container films 12, 13. As illustrated in Fig. 4, the outside container film 12 passing through the pocket forming device 26 includes the outside pocket 2a and an outside flange corresponding unit 12b that protrudes outward from an opening end of the outside pocket 2a. On the other hand, the inside container film 13 that passing through the pocket forming device 26 includes the inside pocket 3a and an inside flange corresponding unit 13b that

protrudes outward from an opening end of the inside pocket 3a. The inside pocket 3a is accommodated in the outside pocket 2a, and the inside flange corresponding unit 13b overlaps the outside flange corresponding unit 12b. The outside flange corresponding unit 12b is a part constituting the outside flange 2b, and the inside flange corresponding unit 13b is a part constituting the inside flange 3b. A process of forming the pockets 2a, 3a (pocket forming process) using the pocket forming device 26 will be described later.

[0066]

Returning to Fig. 5, a supply device 27 as the supply means for supplying a content C to the inside pocket 3a is provided downstream of the pocket forming device 26. For example, the supply device 27 puts a predetermined amount of the content C into the inside pocket 3a by opening a shutter (not illustrated) at predetermined intervals in synchronization with the conveying operation of the container films 12, 13.

[0067]

On the downstream side of the supply device 27, the cover film 14 is superimposed on the container films 12, 13 to be conveyed. Specifically, a predetermined receiving roller 28 is provided downstream of the supply device 27, and the cover film 14 is guided to the receiving roller 28,

whereby the cover film 14 is superimposed on the container films 12, 13 so as to close the openings of the pockets 2a, 3a. The cover film 14 is drawn out from the cover film original fabric 24 formed by winding the cover film 14 in the roll shape, and guided to the receiving roller 28. The cover film 14 is intermittently conveyed downstream by a predetermined conveying means (not illustrated) in synchronization with the conveying operation of the container films 12, 13.

[0068]

A sealing device 29 as the sealing means is provided downstream of the receiving roller 28. As a result, the sealing device 29 is provided according to the position where the conveying paths of the films 12, 13, 14 overlap one another. The sealing device 29 seals the insides of the pockets 2a, 3a by closing the openings of the outside pocket 2a and the inside pocket 3a using the cover film 14. The belt-shaped blister film 11 including the films 12, 13, 14 is obtained by passing through the sealing device 29.

[0069]

The sealing device 29 includes an upper mold 29a and a lower mold 29b both of which can move between the approach positions approaching the films 12, 13, 14 and the retractable positions separating from the films 12, 13, 14 by the driving means (not illustrated). The upper mold 29a

and the lower mold 29b are disposed at the approach positions, thereby sandwiching the films 12, 13, 14. At least a part where the films 12, 13, 14 are sandwiched between the lower mold 29b and the upper mold 29a can be heated by a heater or the like (not illustrated). A process of sealing the pockets 2a, 3a using the sealing device 29 (sealing process) will be described later.

[0070]

A punching device 30 as the punching means for punching the blister film 11 in one unit of the blister pack is provided downstream of the sealing device 29. A cutting device (not illustrated) that cuts a scrap remaining after the punching is disposed downstream of the punching device 30. The scrap is cut into a predetermined size using the cutting device, and stored in a predetermined scrap hopper (not illustrated).

[0071]

A conveyor 31 that transfers the obtained blister pack 1 to a finished product hopper (not illustrated) is provided below the punching device 30.

[0072]

The process of manufacturing the blister pack 1 using the blister packaging machine 20 will be described below. As illustrated in Fig. 6, the process of manufacturing the blister pack 1 includes a pocket forming process S1, a

supply process S2, a sealing process S3, and a punching process S4.

[0073]

The pocket forming process S1 includes a heating process S11, a sandwiching process S12, an inside pocket forming process S13, and an outside pocket forming process S14. In the heating process S11, the heating device 25 simultaneously heats at least the formation ranges of the pockets 2a, 3a in the container films 12, 13.

[0074]

Subsequently, in the sandwiching process S12, the upper mold 262 and the lower mold 263 are disposed at the approach positions, whereby the container films 12, 13 that are put in a temporary stop state are sandwiched between the upper mold 262 and the lower mold 263. More particularly, the upper surfaces of the heating guide 262b and the lower mold 263 sandwich parts constituting the outside flange corresponding unit 12b and the inside flange corresponding unit 13b in of the container films 12, 13. At this time, the plug 262a is disposed at the sinking position. The plug 262a and the heating guide 262b are previously heated.

[0075]

Subsequently, in the inside pocket forming process S13, as illustrated in Fig. 7, the plug 262a is moved to the

protruding position while the container films 12, 13 are sandwiched between the heating guide 262b and the lower mold 263. Consequently, the plug 262a protrudes from the lower surface of the heating guide 262b so as to enter the recess 263a. The container films 12, 13 in an overlapping state are pressed by the plug 262a, and deformed into a shape along the leading end surface of the plug 262a. As a result, the inside pocket 3a and the inside flange corresponding unit 13b are formed with respect to the inside container film 13. The inside pocket 3a is thermally fixed and the shape of the inside pocket 3a is stably maintained. A temporary outside pocket 2c having substantially the same shape as the inside pocket 3a is formed with respect to the outside container film 12.

[0076]

Subsequently, in the outside pocket forming process S14, as illustrated in Fig. 8, while the plug 262a is disposed in the recess 263a to support the inside pocket 3a, the gas is supplied from the air supply device 261 to the heating guide 262b, and supplied from the space 262c to the temporary outside pocket 2c through the inside container film 13. Consequently, the temporary outside pocket 2c is expanded and brought into close contact with the part where the recess 263a is formed in the lower mold 263. As a result, the outside pocket 2a and the outside flange

corresponding unit 12b are formed in the outside container film 12. A chamber H is formed between the pockets 2a, 3a, and the inside pocket 3a is accommodated in the outside pocket 2a. After the outside pocket 2a and the like are formed, the plug 262a is moved to the sinking position, and the upper mold 262 and the lower mold 263 are moved to the retractable positions, thereby releasing the sandwiching of the container films 12, 13.

[0077]

In the container films 12, 13, the part sandwiched between the heating guide 262b and the lower mold 263 is heated and welded. In the embodiment, the sandwiching process S12 corresponds to the preliminary welding step, and the heating guide 262b and the lower mold 263 correspond to the preliminary welding means. A degree of welding in the container films 12, 13 may appropriately be changed according to the material to be used, required performance of the blister pack 1 to be manufactured, and the like.

[0078]

Returning to Fig. 6, in the subsequent supply process S2, the content C is put into the inside pocket 3a from the supply device 27, thereby supplying the content C to the inside pocket 3a.

[0079]

Subsequently, in the sealing process S3, the previously-heated upper mold 29a and the lower mold 29b are disposed at the approach positions, whereby the overlapping portion of the outside flange corresponding unit 12b, the inside flange corresponding unit 13b and the cover film 14 is heated while sandwiched between the upper mold 29a and the lower mold 29b. Consequently, the inside flange corresponding unit 13b and the cover film 14 are welded to the outside flange corresponding unit 12b. As a result, the openings of the pockets 2a, 3a are closed by the cover film 14, and the insides of the pockets 2a, 3a are sealed to obtain the blister film 11. Subsequently, the upper mold 29a and the lower mold 29b are moved to the retractable positions to release the sandwiching of the films 12, 13, 14.

[0080]

Finally, in the punching process S4, the punching device 30 punches the outer periphery near the welded parts of the films 12, 13, 14 in the blister film 11. As a result, the blister pack 1 is obtained.

[0081]

As described above in detail, in the embodiment, the sealing device 29 heats the overlapping portion of the outside flange corresponding unit 12b, the inside flange corresponding unit 13b, and the cover film 14 to weld the

inside flange corresponding unit 13b and the cover film 14 to the outside flange corresponding unit 12b. That is, the sealing device 29 simultaneously welds the inside container 3 and the cover 4 to the outside container 2. Thus, the process of attaching the outside container 2 and the inside container 3 and the process of closing the openings of the outside container 2 and the like using the cover 4 can simultaneously be performed. As a result, the blister pack 1 having a special shape including the accommodation space for the content C and the chamber H can efficiently be manufactured at high speed in the outside container 2, and the production efficiency can be improved.

[0082]

While the inside container 3 and the outside container 2 are manufactured from the container films 12, 13 constituting the material, the blister pack 1 can be obtained by combining the inside container 3 and the outside container 2. Thus, it is not necessary to perform a process of previously manufacturing a container constituting a part of the blister pack to supply (convey) the container to the blister packaging machine 20. Consequently, time and labor can be reduced in manufacturing the blister pack 1, and the blister pack 1 can more efficiently be manufactured at higher speed. As a result, the production efficiency can further be improved.

[0083]

Furthermore, in the blister pack 1, the inside flange 3b is sandwiched and fixed between the outside flange 2b and the cover 4. Thus, the inside container 3 can stably be fixed to the outside container 2, and the inside container 3 can more certainly be prevented from peeling off from the outside container 2.

[0084]

The pocket forming device 26 forms both the inside pocket 3a and the outside pocket 2a having different depths. Thus, the blister packaging machine 20 can be simplified as compared with the case where the devices that form the pockets 2a, 3a are separately provided.

[0085]

Furthermore, the plug 262a is basically used to form the inside pocket 3a with respect to the inside container film 13, and not only the inside pocket 3a but also the temporary outside pocket 2c are simultaneously formed with respect to the outside container film 12 (that is, gas supply space). Thus, the temporary outside pocket 2c can simultaneously be formed in forming the inside pocket 3a without providing a special process of forming the temporary outside pocket 2c. Thus, the production efficiency can further be improved.

[0086]

Additionally, the air permeability of the inside container film 13 is effectively used in forming the outside pocket 2a and the chamber H, so that the outside pocket 2a and the like can be formed by a relatively simple method. Consequently, the production efficiency can further be improved.

[0087]

At the same time, by pressing the inside container film 13 using the heated plug 262a, the inside pocket 3a can be heated and stretched to fix the shape of the inside pocket 3a. Thus, the shape of the inside pocket 3a can more certainly be kept constant, and the content C can more certainly and stably be accommodated in the inside pocket 3a. Contraction and deformation of the inside pocket 3a can be prevented even if a high-temperature object such as hot water contacts with the inside pocket 3a, so that the use of the blister pack 1 can further be expanded.

[0088]

Additionally, in the outside pocket forming process S14, the gas is supplied in order to expand the temporary outside pocket 2c while the inside pocket 3a is supported by the plug 262a. Consequently, the deformation of the inside pocket 3a due to an air flow and the like can be prevented in expanding the temporary outside pocket 2c, and the inside pocket 3a can more certainly be formed into a

target shape.

[0089]

Furthermore, the container films 12, 13 are previously heated by the heating device 25 before pressed by the plug 262a, the inside pocket 3a and the outside pocket 2a can be more easily formed by the pocket forming device 26. The container films 12, 13 are simultaneously heated by the heating device 25, so that the simplification and downsizing of the blister packaging machine 20 can further be achieved as compared with the case where the heating device is separately provided in each of the container films 12, 13.

[0090]

Additionally, the inside container film 13 is the nonwoven fabric, so that the sufficient air permeability can be given to the whole region of the inside container film 13. Thus, the temporary outside pocket 2c can more certainly be expanded during the supply of the gas, and a formation mistake of the outside pocket 2a can effectively be prevented.

[0091]

Furthermore, because the inside container film 13 is the nonwoven fabric, the inside container film 13 can have a large surface area, and the inside container film 13 can firmly be fixed to the outside container film 12 and the

cover film 14. As a result, good sealing performance can be achieved in the obtained blister pack 1.

[0092]

Before the cover film 14 is welded, the inside flange corresponding unit 13b and the outside flange corresponding unit 12b are welded by the heating guide 262b and the lower mold 263 as the preliminary welding means. Thus, the flange corresponding units 12b, 13b and the cover film 14 can more firmly be fixed in the blister film 11 obtained through the sealing process S3. As a result, the extremely good sealing performance can be achieved in the obtained blister pack 1.

[0093]

The present invention is not limited to the content of the embodiment. For example, the present invention may be implemented as follows. Other application examples and modification examples that are not illustrated below can also be implemented.

[0094]

(a) Although the coffee powder is illustrated as the content C in the embodiment, the content is not limited to the coffee powder. For example, the contents may be sources of beverages such as green tea and black tea (a tea leaf and the like), foods such as tofu and gelidium jelly, broken items, electronic devices, toys, playthings, and the

like.

[0095]

(b) In the embodiment, in the outside pocket forming process S14, the gas is supplied to the temporary outside pocket 2c through the inside container film 13, whereby the temporary outside pocket 2c is expanded to form the outside pocket 2a. On the other hand, as illustrated in Fig. 9, a predetermined negative pressure is supplied to the recess 263a of the lower mold 263 by a negative pressure supply device 264 as the outside pocket forming means including a vacuum pump, and the temporary outside pocket 2c may be expanded to form the outside pocket 2a by sucking the temporary outside pocket 2c to the opposite side to the inside pocket 3a. Even in this case, using the air permeability of the inside container film 13, the temporary outside pocket 2c can more certainly be expanded, and the outside pocket 2a and the chamber H can more certainly be formed. The outside pocket 2a may be formed by simultaneously performing the supply of the gas to the temporary outside pocket 2c and the suction of the temporary outside pocket 2c.

[0096]

(c) In the embodiment, the outside pocket 2a may be formed after the inside pocket 3a is formed by the plug 262a. On the other hand, the inside pocket 3a may be

formed after the outside pocket 2a is formed. For example, as illustrated in Fig. 10, after the temporary inside pocket 3c shallower than the finally-formed inside pocket 3a is formed in the inside container film 13 by pressing the container films 12, 13 using the plug 262a, the temporary outside pocket 2c having substantially the same shape as the temporary inside pocket 3c is formed in the outside container film 12. Subsequently, as illustrated in Fig. 11, the outside pocket 2a is formed by supplying the gas from the air supply device 261 to the temporary outside pocket 2c through the inside container film 13. Finally, as illustrated in Fig. 12, the inside pocket 3a may be formed by pressing the temporary inside pocket 3c using the plug 262a. That is, as illustrated in Fig. 13, after the sandwiching process S12, the pocket forming process S1 may include a temporary pocket forming process S15 of forming the temporary inside pocket 3c and the temporary outside pocket 2c, an outside pocket forming process S16 of forming the outside pocket 2a, and an inside pocket forming process S17 of forming the inside pocket 3a. In this case, the inside pocket 3a is finally formed after the outside pocket 2a is formed. Thus, the inside pocket 3a can more certainly formed into a desired shape.

[0097]

(d) In the embodiment, the inside pocket 3a is formed

by pressing the inside container film 13 using the heated plug 262a, and the inside pocket 3a is thermally fixed. On the other hand, the inside pocket 3a may be formed by pressing the inside container film 13 using the normal-temperature plug 262a, and the inside pocket 3a may be configured to gradually contract over time. In this case, using the contraction of the inside pocket 3a, for example, the content C is sandwiched between the cover 4 and the inside pocket 3a so as not to move easily in the inside pocket 3a, or the content C can be held in a compressed state.

[0098]

(e) The shape of the blister pack 1 is not limited to that described in the above embodiment. Thus, for example, the outside pocket 2a and the inside pocket 3a may be formed into a bottomed rectangular tube shape or a bottomed polygonal tube shape, or the sizes of the pockets 2a, 3a may appropriately be changed. The shape of the cover 4 can also appropriately be changed.

[0099]

(f) In the embodiment, the outside container film 12 and the inside container film 13 are configured to be supplied from the separate original fabrics. Alternatively, the container films 12, 13 may be supplied from the single original fabric in which the container films 12, 13 are

wound while overlapping each other.

[0100]

(g) The materials for the outside container 2 (outside container film 12), the inside container 3 (inside container film 13), and the cover 4 (cover film 14) in the embodiment are only by way of example, and these materials may appropriately be changed. The inside container 3 (inside container film 13) is not limited to the nonwoven fabric as long as the inside container 3 has the air permeability. For example, the inside container 3 (inside container film 13) may be formed by a film including a large number of vent holes.

[0101]

(h) In the embodiment, the sandwiching process S12 corresponds to the preliminary welding step. Alternatively, in the sandwiching process S12, the container films 12, 13 are simply sandwiched but not heated, and a preliminary welding process may be provided after the pocket forming process S1 and before the sealing process S3. When the container films 12, 13 are heated while sandwiched by the heating device 25, a preliminary welding process may be performed by pressing a surrounding of the portion corresponding to the inside pocket 3a. In this case, the pressing portion of the upper mold 25a may be formed into a convex ring shape. The preliminary welding process may not

be provided.

Reference Signs List

[0102]

- 1 blister pack
- 2 outside container
- 2a outside pocket
- 2b outside flange
- 2c temporary outside pocket
- 3 inside container
- 3a inside pocket
- 3b inside flange
- 3c temporary inside pocket
- 4 cover
- 11 blister film
- 12 outside container film
- 12b outside flange corresponding unit
- 13 inside container film
- 13b inside flange corresponding unit
- 14 cover film
- 20 blister packaging machine
- 25 heating device (heating means)
- 26 pocket forming device (pocket forming means)
- 27 supply device (supply means)
- 29 sealing device (sealing means)

30 punching device (punching means)
261 air supply device (outside pocket forming means)
262a plug (inside pocket forming means)
262b heating guide (preliminary welding means)
263 lower mold (recessed mold, preliminary welding means)
263a recess
264 negative pressure supply device (outside pocket forming means)
C content
H chamber
S1 pocket forming process
S2 supply process
S3 sealing process
S4 punching process
S11 heating process
S12 sandwiching process (preliminary welding process)
S13, S17 inside pocket forming process
S14, S16 outside pocket forming process
S15 temporary pocket forming process

CLAIMS

1. A blister packaging machine that manufactures a blister pack, the blister pack including:

an inside container including an inside pocket accommodating a predetermined content;

an outside container including an outside pocket accommodating the inside pocket; and

a cover provided so as to close openings of the inside pocket and the outside pocket in a state in which the content is accommodated in the inside pocket while the inside pocket is accommodated in the outside pocket,

a predetermined chamber being formed between the inside pocket in the outside pocket and the outside pocket,

the blister packaging machine comprising:

the supply means for supplying the content to the inside pocket formed in a belt-shaped inside container film to be conveyed;

sealing means provided downstream of the supply means according to a position where conveying paths of the inside container film and a belt-shaped outside container film to be conveyed, the sealing means obtaining a belt-shaped blister film including the inside container film, the outside container film, and a belt-shaped cover film by closing the openings of the inside pocket and the outside pocket using the cover film to seal an insides of the

inside and outside pockets;

punching means for punching the blister film on a downstream side of the sealing means; and

pocket forming means for forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film on an upstream side of the sealing means,

wherein the inside container film has air permeability,

the sealing means heats an overlapping portion of an outside flange corresponding unit protruding outward from an opening end of

the outside pocket in the outside container film, an inside flange corresponding unit protruding outward from an opening end of the

inside pocket in the inside container film, and the cover film, and welds the inside flange corresponding unit and the cover film to the outside flange corresponding unit, and

the pocket forming means includes:

inside pocket forming means for deforming the inside and outside container films by pressing the inside and outside container films in an overlapping state, forming the inside pocket in the inside container film, and forming a temporary outside pocket having a shape substantially identical to that of the inside pocket in the outside

container film; and

outside pocket forming means for performing at least one of supply of gas to the temporary outside pocket through the inside container film and suction of the temporary outside pocket onto an opposite side to the inside pocket, expanding the temporary outside pocket to bring the temporary outside pocket into close contact with a recessed mold including a recess having a shape corresponding to the outside pocket, and forming the outside pocket in the outside container film.

2. The blister packaging machine according to claim 1, wherein the inside pocket forming means is configured to be heatable, and configured to be disposed in the recess when the inside and outside container films are pressed, and

the outside pocket forming means is configured to expand the temporary outside pocket while the inside pocket forming means is disposed in the recess to support the inside pocket.

3. A blister packaging machine that manufactures a blister pack, the blister pack including:

an inside container including an inside pocket accommodating a predetermined content;

an outside container including an outside pocket accommodating the inside pocket; and

a cover provided so as to close openings of the inside

pocket and the outside pocket in a state in which the content is accommodated in the inside pocket while the inside pocket is accommodated in the outside pocket,

a predetermined chamber being formed between the inside pocket in the outside pocket and the outside pocket,

the blister packaging machine comprising:

supply means for supplying the content to the inside pocket formed in a belt-shaped inside container film to be conveyed;

sealing means provided downstream of the supply means according to a position where conveying paths of the inside container film and a belt-shaped outside container film to be conveyed, the sealing means obtaining a belt-shaped blister film including the inside container film, the outside container film, and a belt-shaped cover film by closing the openings of the inside pocket and the outside pocket using the cover film to seal an insides of the inside and outside pockets;

punching means for punching the blister film on a downstream side of the sealing means; and

pocket forming means for forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film on an upstream side of the sealing means,

wherein the inside container film has air permeability,

the sealing means heats an overlapping portion of an outside flange corresponding unit protruding outward from an opening end of the outside pocket in the outside container film, an inside flange corresponding unit protruding outward from an opening end of the inside pocket in the inside container film, and the cover film, and welds the inside flange corresponding unit and the cover film to the outside flange corresponding unit, and

the pocket forming means includes:

inside pocket forming means for deforming the inside and outside container films by pressing the inside and outside container films in an overlapping state, forming a predetermined temporary inside pocket in the inside container film, and forming a temporary outside pocket having a shape substantially identical to that of the temporary inside pocket in the outside container film; and

outside pocket forming means for performing at least one of supply of gas to the temporary outside pocket through the inside container film and suction of the temporary outside pocket onto an opposite side to the temporary inside pocket, expanding the temporary outside pocket to bring the temporary outside pocket into close contact with a recessed mold including a recess having a shape corresponding to the outside pocket, and forming the outside pocket in the outside container film, and

the inside pocket is formed in the inside container film by pressing the temporary inside pocket using the inside pocket forming means after the formation of the outside pocket.

4. The blister packaging machine according to any one of claims 1 to 3, further comprising preliminary welding means for welding the inside flange corresponding unit and the outside flange corresponding unit on the upstream side of the sealing means.

5. The blister packaging machine according to any one of claims 1 to 4, further comprising heating means for simultaneously heating the outside container film and the inside container film in the overlapping state before the inside pocket forming means presses the inside and outside container films.

6. The blister packaging machine according to any one of claims 1 to 5, wherein the inside container film is a nonwoven fabric made of a thermoplastic resin material.

7. A method for manufacturing a blister pack, the blister pack including:

an inside container including an inside pocket accommodating a predetermined content;

an outside container including an outside pocket accommodating the inside pocket; and

a cover provided so as to close openings of the inside

pocket and the outside pocket in a state in which the content is accommodated in the inside pocket while the inside pocket is accommodated in the outside pocket,

a predetermined chamber being formed between the inside pocket in the outside pocket and the outside pocket,

the blister pack manufacturing method comprising:

a supply step of supplying the content to the inside pocket formed in a belt-shaped inside container film to be conveyed;

a sealing step of obtaining a belt-shaped blister film including the inside container film, a belt-shaped outside container film to be conveyed, and a belt-shaped cover film by closing the openings of the inside pocket and the outside pocket using the cover film to seal an inside of the inside and outside pockets in a state in which the inside pocket is accommodated in the outside pocket formed in the outside container film while the inside container film and the outside container film overlap each other after the supply step;

a punching step of punching the blister film after the sealing step; and

a pocket forming step of forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film before the sealing step,

wherein the inside container film has air permeability,
in the sealing step, an overlapping portion of an
outside flange corresponding unit protruding outward from
an opening end of the outside pocket in the outside
container film, an inside flange corresponding unit
protruding outward from an opening end of the inside pocket
in the inside container film, and the cover film is heated
to weld the inside flange corresponding unit and the cover
film to the outside flange corresponding unit, and

the pocket forming step includes:

an inside pocket forming step of deforming the inside
and outside container films by pressing the inside and
outside container films in an overlapping state, forming
the inside pocket in the inside container film, and forming
a temporary outside pocket having a shape substantially
identical to that of the inside pocket in the outside
container film; and

an outside pocket forming step of performing at least
one of supply of gas to the temporary outside pocket
through the inside container film and suction of the
temporary outside pocket onto an opposite side to the
inside pocket, expanding the temporary outside pocket to
bring the temporary outside pocket into close contact with
a recessed mold including a recess having a shape
corresponding to the outside pocket, and forming the

outside pocket in the outside container film.

8. The blister pack manufacturing method according to claim 7, wherein in the inside pocket forming step, the inside and outside container films are pressed by inside pocket forming means that can be heated, and the inside pocket forming means is disposed in the recess when the inside and outside container films are pressed, and

in the outside pocket forming step, the temporary outside pocket is expanded while the inside pocket forming means is disposed in the recess to support the inside pocket.

9. A method for manufacturing a blister pack, the blister pack including:

an inside container including an inside pocket accommodating a predetermined content;

an outside container including an outside pocket accommodating the inside pocket; and

a cover provided so as to close openings of the inside pocket and the outside pocket in a state in which the content is accommodated in the inside pocket while the inside pocket is accommodated in the outside pocket,

a predetermined chamber being formed between the inside pocket in the outside pocket and the outside pocket,

the blister pack manufacturing method comprising:

a supply step of supplying the content to the inside

pocket formed in a belt-shaped inside container film to be conveyed;

a sealing step of obtaining a belt-shaped blister film including the inside container film, a belt-shaped outside container film to be conveyed, and a belt-shaped cover film by closing the openings of the inside pocket and the outside pocket using the cover film to seal an insides of the inside and outside pockets in a state in which the inside pocket is accommodated in the outside pocket formed in the outside container film while the inside container film and the outside container film overlap each other after the supply step;

a punching step of punching the blister film after the sealing step; and

a pocket forming step of forming the inside pocket with respect to the inside container film, and forming the outside pocket with respect to the outside container film before the sealing step,

wherein the inside container film has air permeability,

in the sealing step, an overlapping portion of an outside flange corresponding unit protruding outward from an opening end of the outside pocket in the outside container film, an inside flange corresponding unit protruding outward from an opening end of the inside pocket in the inside container film, and the cover film is heated

to weld the inside flange corresponding unit and the cover film to the outside flange corresponding unit, and

the pocket forming step includes:

a temporary pocket forming step of deforming the inside and outside container films by pressing the inside and outside container films in an overlapping state, forming a predetermined temporary inside pocket in the inside container film, and forming a temporary outside pocket having a shape substantially identical to that of the temporary inside pocket in the outside container film;

an outside pocket forming step of performing at least one of supply of gas to the temporary outside pocket through the inside container film and suction of the temporary outside pocket onto an opposite side to the temporary inside pocket, expanding the temporary outside pocket to bring the temporary outside pocket into close contact with a recessed mold including a recess having a shape corresponding to the outside pocket, and forming the outside pocket in the outside container film; and

an inside pocket forming step of forming the inside pocket in the inside container film by pressing the temporary inside pocket after the outside pocket forming step.

10. The blister pack manufacturing method according to any one of claims 7 to 9, further comprising a preliminary

welding step of welding the inside flange corresponding unit and the outside flange corresponding unit before the sealing step.

11. The blister pack manufacturing device according to any one of claims 7 to 10, further comprising a heating step of simultaneously heating the outside container film and the inside container film in the overlapping state before the both container films are pressed and deformed.

12. The blister pack manufacturing method according to any one of claims 7 to 11, wherein the inside container film is a nonwoven fabric made of a thermoplastic resin.