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(71) Applicant: **Chai, Young Min**
Incheon 403-719 (KR)

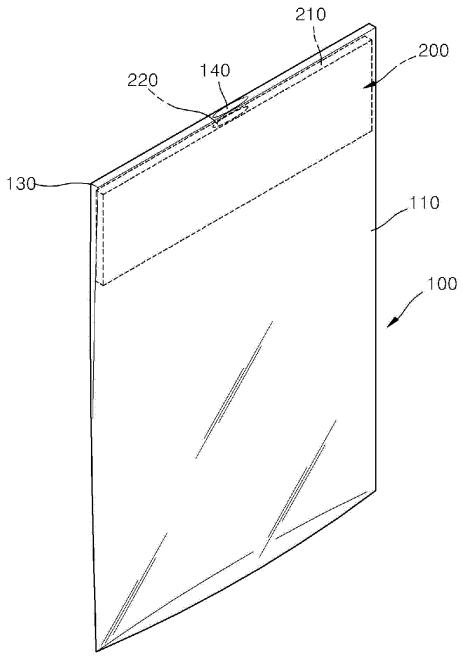
(72) Inventor: **Chai, Young Min**
Incheon 403-719 (KR)

(74) Representative: **Jell, Friedrich**
Bismarckstrasse 9
4020 Linz (AT)

(54) LAUNDRY PACKING MATERIAL AND PRODUCTION METHOD THEREFOR

(57) The laundry packing material according to the present invention comprises a cover part and a support part. In the present invention, with the support part joined towards the top on the inside of the cover part, the outside surface towards the top of the cover part is selectively printed with a predetermined design by means of a separate additional process, and a plurality of tear-off holes are formed in the width direction of the cover part such that one portion from which the cover part is formed can be torn off the remaining portion, and the support part is subjected in advance to a lavender aroma or other such aromatization or an antimicrobial or an anti-wetting dipping process. According to the present invention, it is possible to respond individually to a plurality of laundry business customers without creating excess inventory and it is possible to pre-empt product quality complaints from not only laundry business operators but also a plurality of laundry using customers and at the same time it is possible to provide a bespoke service to laundry using customers.

【Fig.3】



EP 2 891 612 A1

Description

[Technical Field]

[0001] The present invention relates to a laundry packing material, and more particularly to a laundry packing material in which support parts are disposed in the top of a cover part, the outer surface of the top of the cover part is selectively printed with a predetermined design, as needed, and the support parts are subjected to aroma treatment using a lavender or other selected aroma, antimicrobial treatment or anti-wetting treatment through a dipping process so as to respectively respond to a plurality of laundry business operators without creating excess inventory and to provide a customized service to customers requesting laundry, and a production method thereof.

[Background Art]

[0002] In general, laundry packing materials are formed of transparent vinyl so that laundry may be viewed from the outside, and take the form of an envelope, one side of which is opened.

[0003] That is, washed laundry is received in a laundry packing material through an opened part and thus, adhesion of foreign substances, such as dust, to the washed laundry is prevented.

[0004] However, since conventional laundry packing materials are not well ventilated, when laundry is stored in the laundry packing materials for a long time, the laundry may be discolored or deteriorated.

[0005] In order to solve such a drawback, if holes are formed on a cover part of the laundry packing material formed of vinyl at random, formation of such holes may cause deformation of the cover part.

[0006] Therefore, development of a product promoting ventilation of a laundry packing material and suppressing deformation generated due to formation of the product is required.

[0007] Thus, Korean Patent Registered Patent No. 1119530 is disclosed.

[0008] FIG. 1 is a schematic view illustrating a formation process of a conventional laundry packing material and FIG. 2 is a schematic view illustrating main elements of the conventional laundry packing material.

[0009] With reference to FIGs. 1 and 2, a design for identification of each laundry business operator, including a logo and a telephone number thereof, is printed on the surface of one side of support parts 2, the support parts 2 are put on the outer surface of a cover part 1 formed of transparent vinyl and then are joined to the cover part 1 by thermal fusion (represented by reference numerals 31 to 34).

[0010] Therefore, in case of laundry of different laundry business operators, support parts 2 printed with different designs are put on the outer surfaces of cover parts 1. Thus, if a large amount of laundry packing materials are mass-produced through thermal fusion, excess inventory of laundry packing materials is inevitably generated.

[0011] Further, since respective corners of the support parts 2 joined to the outer surface of the cover part 1 by thermal fusion may be folded or damaged during a working process, customers requesting laundry as well as small-scale laundry business operators frequently express dissatisfaction due to poor quality.

[0012] Moreover, a customized service may not be additionally provided to individual customers requesting laundry.

[Disclosure]

[Technical Problem]

[0013] Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a laundry packing material which may be mass-produced without creating excess inventory so as to remarkably reduce production costs, and a production method thereof.

[0014] It is another object of the present invention to provide a laundry packing material which may prevent quality complaints from a plurality of customers requesting laundry, and a production method thereof.

[0015] It is yet another object of the present invention to provide a laundry packing material which may additionally provide an ideally customized service to customers requesting laundry, and a production method thereof.

[Technical Solution]

[0016] In accordance with an aspect of the present invention, the above and other objects can be accomplished by the provision of a laundry packing material including a cover part having a reception space to receive laundry, formed of a transparent synthetic resin, and including a through hole so as to expose a loop-shaped hanging part of a hanger to the outside, and support parts joined to the top of the inside of the cover part so as not to be separated from the cover part and including an exposure hole communicating with the through hole so as to expose the hanging part of the hanger to the outside, wherein the outer surface of the top of the cover part is selectively printed with a predetermined design by a separate additional process under the condition that the support parts are joined to the top of the inside of the cover part, a plurality of tear-off holes is formed in the width direction of the cover part so that one portion of the cover part may be torn off from the remaining portion, and the support parts is subjected to one of aroma treatment using a selected aroma, antimicrobial treatment and anti-wetting treatment through a dipping process.

[0017] The support parts may be joined to the top of the inside of the cover part by thermal fusion.

[0018] In accordance with another aspect of the present invention, there is provided a production method

of a laundry packing material including supplying a vinyl member to an apparatus (Operation S100), temporarily fusing support parts to the vinyl member (Operation S150), and supplying a pair of the vinyl members, to which the support parts are temporarily fused, to the apparatus, fusing the support parts to a cover part formed by the vinyl members in a pair and fusing the vinyl members in a pair to each other along the edges thereof in the length direction (Operation S200).

[0019] The production method may further include performing one of aroma treatment using a selected aroma, antimicrobial treatment and anti-wetting treatment on the surfaces of the support parts through a dipping process.

[0020] The support parts may be joined in advance to the inside of the vinyl member during preparation of the vinyl member.

[Advantageous Effects]

[0021] As described above, in the laundry packing material and the production method thereof in accordance with the present invention, since a large-scale laundry business operator, entrusted with laundry by several laundry business operators, may print specific logos (or telephone numbers) for identification of the laundry business operators on the laundry after cleaning of the laundry and the laundry may be packed with laundry packing materials corresponding to the individual laundry business operators and then delivered to the laundry business operators, even if a large amount of the laundry packing material is mass-produced in advance, excess inventory is not generated, mass-production of the laundry packing material is possible and production costs may be remarkably reduced.

[0022] Further, in the laundry packing material and the production method thereof in accordance with the present invention, the external appearances of support parts are not contaminated or damaged during a treatment process and thus a laundry business operator may prevent quality complaints from plural customers requesting laundry, and the laundry packing material may be used for a long time and recycled.

[0023] Further, in the laundry packing material and the production method thereof in accordance with the present invention, the support parts which are disposed within a cover part are subjected in advance to aroma treatment using a lavender or other selected aroma, antimicrobial treatment or anti-wetting treatment through a dipping process so that an antimicrobial agent or an anti-wetting agent is confined in the cover part and the effect thereof may be sustained for a longer time and thus, an ideally customized service may be provided to customers requesting laundry.

[Description of Drawings]

[0024] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a schematic view illustrating a formation process of a conventional laundry packing material;
FIG. 2 is a schematic view illustrating main elements of the conventional laundry packing material;
FIG. 3 is a schematic view illustrating a laundry packing material in accordance with the present invention in a state in which support parts are disposed within a cover part;
FIG. 4 is a front view illustrating a state of the laundry packing material in accordance with the present invention in a state in which the support parts are joined to the inside of the cover part by fusion;
FIG. 5 is a front view illustrating the laundry packing material in accordance with the present invention in a state in which an advertising design for identification of a laundry business operator is printed on the outer surface of the top of the cover part after fusion;
FIG. 6 is a front view illustrating the laundry packing material in accordance with the present invention in a state in which the lower portion of the cover part is removed along tear-off holes according to use of the laundry packing material;
FIG. 7 is a flowchart illustrating a production method of a laundry packing material in accordance with the present invention; and
FIGs. 8 to 10 are reference views illustrating the production method in accordance with the present invention.

[Best Mode]

[0025] Hereinafter, preferred embodiments of the present invention will be described in detail with reference to the annexed drawings.

[0026] In the following description of the present invention, a detailed description of known functions and configurations incorporated herein will be omitted when it may make the subject matter of the present invention rather unclear.

[0027] Further, the terms used in the following description are defined taking into consideration the functions obtained in accordance with the present invention. The definitions of these terms should be determined based on the whole content of this specification because they may be changed in accordance with the intention of a client, an operator, or a user or a usual practice.

[0028] In the drawings, the same or similar elements are denoted by the same reference numerals even though they are depicted in different drawings.

[0029] FIG. 3 is a schematic view illustrating a laundry packing material in accordance with the present invention in a state in which support parts are disposed within a cover part and FIG. 4 is a front view illustrating a state of the laundry packing material in accordance with the present invention in a state in which the support parts

are joined to the inside of the cover part by fusion.

[0030] With reference to FIGs. 3 and 4, a laundry packing material in accordance with one embodiment of the present invention will be described in detail.

[0031] First, in the laundry packing material in accordance with this embodiment of the present invention, a cover part 100 has a reception space in which laundry may be received and is formed of a transparent material so that the laundry may be easily viewed from the outside.

[0032] Further, in accordance with one embodiment of the present invention, both edges of the cover part 100 are formed to have an 'M'-shaped cross-section, as exemplarily shown by 'reference numeral 130' in FIG. 3.

[0033] Thereby, since the reception space of the cover part 100 is relatively enlarged, a plurality of laundry having different sizes may be packed with one product and clothes having a large thickness, such as a winter jacket, may be sufficiently disposed within the reception space of the cover part 100.

[0034] Further, in accordance with one embodiment, as exemplarily shown in FIGs. 4 to 6, a plurality of tear-off holes 180 is formed on the cover part 100 in the width direction of the cover part 100 so that the lower portion of the cover part 100 may be torn off from the upper portion of the cover part 100.

[0035] Thereby, a user, i.e., a laundry requesting customer, may tear off one portion of the cover part 100 from the remaining portion, as needed, while using the laundry packing material in accordance with this embodiment, as exemplarily shown in FIG. 6.

[0036] Thus, a portion of the laundry on which dust is laid may be covered by the upper portion of the cover part 100 and a portion of the laundry which on which dust is not laid may be effectively ventilated.

[0037] Accordingly, in accordance with the above-described embodiment of the present invention, a user, i.e., a laundry requesting customer, may select a packed state according to products, thus increasing user convenience.

[0038] Further, the cover part 100 and support parts 200 may be formed of a material, such as an unwoven fabric, so as to be joined by fusion using high-frequency waves.

[0039] By bonding the cover part 100 and the support parts 200 by fusion using high-frequency waves or fusion through melting using various methods, separation of the support parts 200 from the cover part 100 is prevented.

[0040] Further, a vinyl member 110 forming the cover part 100 is provided with a cutting line C (in FIGs. 4 to 6) for each unit length and may be cut into respective laundry packing materials to pack laundry along the cutting line and then finally delivered to a laundry requesting customer.

[0041] FIG. 5 is a front view illustrating the laundry packing material in accordance with the present invention in a state in which an advertising design for identification of a laundry business operator is printed on the outer surface of the top of the cover part after fusion.

[0042] Differing from the conventional laundry packing material in which an advertising design for identification of each laundry business operator is printed on the surface of one side of the support parts 2 and the support parts 2 is put on the outer surface of the cover part 1 and joined to the outer surface of the cover part 1 by thermal fusion (with reference to FIGs. 1 and 2), in the laundry packing material in accordance with the present invention, the support parts 200 and the cover part 100 are joined to each other by thermal fusion under the condition that the support parts 200 are disposed within the top of the inside of the cover part 100 (with reference to FIG. 4) and a laundry business operator identifier 170 including an advertising design is printed on the top of the outer surface of the cover part 100.

[0043] Therefore, in the laundry packing material and the production method thereof in accordance with the present invention, laundry may be packed with the laundry packing material corresponding to each of respective laundry business operators and respectively supplied to the laundry business operators and thus, even if a large amount of the laundry packing material is mass-produced in advance, excess inventory is not generated, mass-production of the laundry packing material is possible and production costs may be remarkably reduced.

[0044] FIG. 7 is a flowchart illustrating a production method of a laundry packing material in accordance with the present invention and FIGs. 8 to 10 are reference views illustrating the production method in accordance with the present invention.

[0045] With reference to FIG. 7, a production method of a laundry packing material in accordance with one embodiment of the present invention includes supplying a vinyl member 110 to an apparatus (Operation S100), temporarily fusing support parts 200 to the vinyl member 110 (Operation S150), supplying a pair of vinyl members 110, to which the support parts 200 are temporarily fused, to the apparatus, fusing the support parts 200 to a cover part 100 formed by the vinyl members 110 in a pair and fusing the vinyl members 110 in a pair to each other along the edges thereof in the length direction (Operation S200), and forming a cutting line and tear-off holes in the width direction of the laundry packing material in which the edges of the vinyl members 110 in a pair are fused (Operation S300).

[0046] Now, the production method through the respective operations will be described in detail.

[0047] First, supply of the vinyl member 110 to the apparatus (Operation S100) will be described in more detail.

[0048] Here, the apparatus is a separate manufacturing apparatus including a frame (not shown) installed on the base of a place where manufacture of the laundry packing material is carried out and a vinyl member feed roller R (with reference to FIG. 8) rotatably disposed on the frame and a detailed description thereof will be omitted.

[0049] Further, 'supply of the vinyl member 110 to the apparatus' means 'preparation of subsequent manufac-

ture of the laundry packing material' while unwinding a sheet of the vinyl member 110 from the vinyl member feed roller R by a predetermined unit length.

[0050] Further, a process of unwinding the sheet of the vinyl member 110 from the vinyl member feed roller R by the predetermined unit length may be automatically carried out.

[0051] Thereafter, temporary fusion of the support parts 200 (Operation S150) to the vinyl member 110 will be described in detail.

[0052] As exemplarily shown in FIG. 9, the support parts are attached to the vinyl member 110, supplied by the apparatus, at regular intervals through thermal fusion. Here, the support parts 200 are formed in a rectangular shape and thus, thermal fusion is carried out along the edges of the support parts 200.

[0053] Thereafter, supply of a pair of vinyl members 110, to which the support parts 200 are temporarily fused, to the apparatus, fusion of the support parts 200 to the cover part 100 formed by the vinyl members 110 in a pair and fusion of the vinyl members 110 in a pair to each other along the edges thereof in the length direction (Operation S200) will be described in more detail.

[0054] That is, as exemplarily shown in FIG. 10, when a pair of the vinyl members 110, to which the support parts 200 are temporarily fused, is supplied such that the support parts 200 are disposed opposite each other and fused to each other, the support parts 200 are disposed within the vinyl members 110, as exemplarily shown in FIG. 3.

[0055] When a pair of the vinyl members 110 is supplied and the support parts 200 are joined to the cover part 100 formed by the vinyl members 110 in a pair by thermal fusion, as exemplarily shown in FIG. 10, a fusion part shown in FIG. 4 is formed and simultaneously, when fusion of the vinyl members 110 in a pair is carried out along the edges of the vinyl members 110 in a pair in the length direction, the vinyl members 110 take the form of an envelope, one side of which is opened, is formed.

[0056] Thermal fusion is bonding and fixation between two sheets of support parts 200 and two sheets of vinyl members 110 and 110 forming the cover part 100 by pressing specific regions 150, 160 190 (with reference to FIGs. 4 to 6) at a high temperature under the condition that the two sheets of support parts 200 are piled within the two sheets of vinyl members 110 and 110, and means fusion between opposite materials by melting the materials using not only high frequency waves but also other various methods. Here, materials, such as polypropylene-based materials, may be used.

[0057] Both ends of the vinyl members 110 in a pair in the width direction after thermal fusion may have an M-shaped cross-section, as exemplarily shown in FIG. 3.

[0058] Further, in the laundry packing material in accordance with the present invention, a desired specific logo (or telephone number) is printed on the surface of the top of the cover part, into which the support parts are inserted and fused.

[0059] Differing from the conventional laundry packing material production method in which support parts printed with a desired specific logo (or telephone number) are put on the outer surface of the cover part and then joined to the cover part by thermal fusion, in the laundry packing manufacturing material in accordance with the present invention, the support parts 200 are disposed in the cover part 100 and joined to the cover part 100 by thermal fusion and then a desired specific logo (or telephone number) and the like is printed on the surface of the top of the cover part 100 under the condition that the support parts 200 are joined to the cover part 100 by thermal fusion.

[0060] That is, since a desired specific logo (or telephone number) may be printed on the surface of the top of the cover part 100 under the condition that the supports parts 200 are disposed within the cover part 100 and joined to the cover part 100 by thermal fusion, a large-scale laundry business operator, entrusted with laundry by several laundry business operators, may print specific logos (or telephone numbers) for identification of the laundry business operators on the laundry after cleaning of the laundry.

[0061] Therefore, since the laundry may be packed with laundry packing materials corresponding to the individual laundry business operators and then delivered to the laundry business operators, even if a large amount of the laundry packing material is mass-produced in advance, excess inventory is not generated, mass-production of the laundry packing material is possible and production costs may be remarkably reduced.

[0062] Finally, formation of the cutting line and the tear-off holes in the width direction of the laundry packing material in which both ends of the vinyl members 110 in a pair are fused (Operation S300) will be described in more detail.

[0063] While the cover part 100 protects laundry from external contaminants during a process of delivering the laundry to a final laundry requesting customer, the tear-off holes serve as a cutting line assisting the final laundry requesting customer to remove the lower portions of the vinyl members 110 and 100 from the laundry when the final laundry requesting customer takes the laundry home.

[0064] Further, the cutting line C is a line to cut the laundry packing material in accordance with the present invention wound in a roller type into unit lengths.

[0065] Therefore, in the laundry packing material and the production method thereof in accordance with the present invention, even if a large amount of the laundry packing material is mass-produced in advance, excess inventory is not generated and thus, mass-production of the laundry packing material is possible and production costs may be remarkably reduced.

[0066] Further, in the laundry packing material and the production method thereof in accordance with the present invention, the external appearances of the support parts 200 are not contaminated and damaged during a treatment process and thus a laundry business oper-

ator may prevent quality complaints from a plurality of customers requesting laundry, and the laundry packing material may be used for a long time and thus recycled.

[0067] Further, in the laundry packing material and the production method thereof in accordance with the present invention, the support parts 200 which are disposed within the cover part 100 are subjected to aroma treatment using a lavender or other selected aroma, antimicrobial treatment or anti-wetting treatment through a dipping process so that an antimicrobial agent or an anti-wetting agent is confined in the cover part 100 and the effect thereof may be sustained for a longer time and thus, an ideally customized service may be provided to customers requesting laundry.

[0068] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

[0069] Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Claims

1. A laundry packing material comprising:

   a cover part (100) having a reception space to receive laundry, formed of a transparent synthetic resin, and including a through hole (140) so as to expose a loop-shaped hanging part (B) of a hanger to the outside; and
   support parts (200) joined to the top of the inside of the cover part (100) so as not to be separated from the cover part (100) and including an exposure hole (220) communicating with the through hole (140) so as to expose the hanging part (B) of the hanger to the outside,
   wherein the outer surface of the top of the cover part (100) is selectively printed with a predetermined design by a separate additional process under the condition that the support parts (200) are joined to the top of the inside of the cover part (100), a plurality of tear-off holes (180) is formed in the width direction of the cover part (100) so that one portion of the cover part (100) may be torn off from the remaining portion, and the support parts (200) are subjected to one of aroma treatment using a selected aroma, antimicrobial treatment and anti-wetting treatment through a dipping process.

2. The laundry packing material according to claim 1, wherein the support parts (200) are joined to the top of the inside of the cover part (100) by thermal fusion.

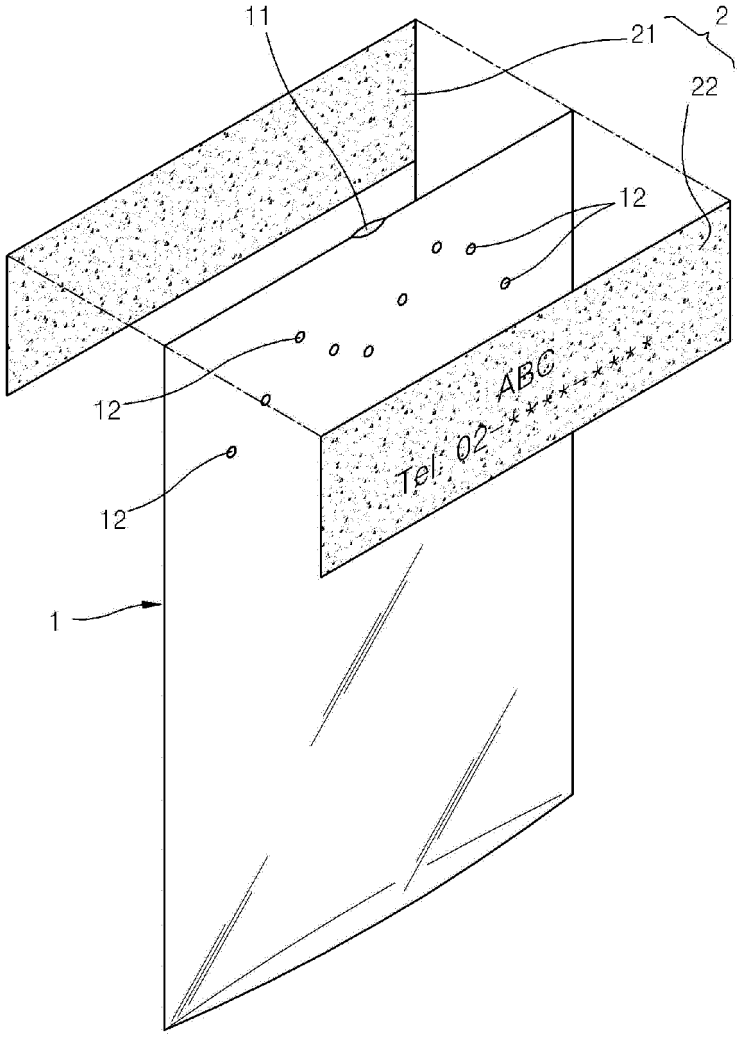
3. A production method of a laundry packing material comprising:

   supplying a vinyl member (110) to an apparatus (Operation S100);
   temporarily fusing support parts (200) to the vinyl member (110) (Operation S150); and
   supplying a pair of the vinyl members (110), to which the support parts (200) are temporarily fused, to the apparatus, fusing the support parts (200) to a cover part (100) formed by the vinyl members (110) in a pair and fusing the vinyl members (110) in a pair to each other along the edges thereof in the length direction (Operation S200);

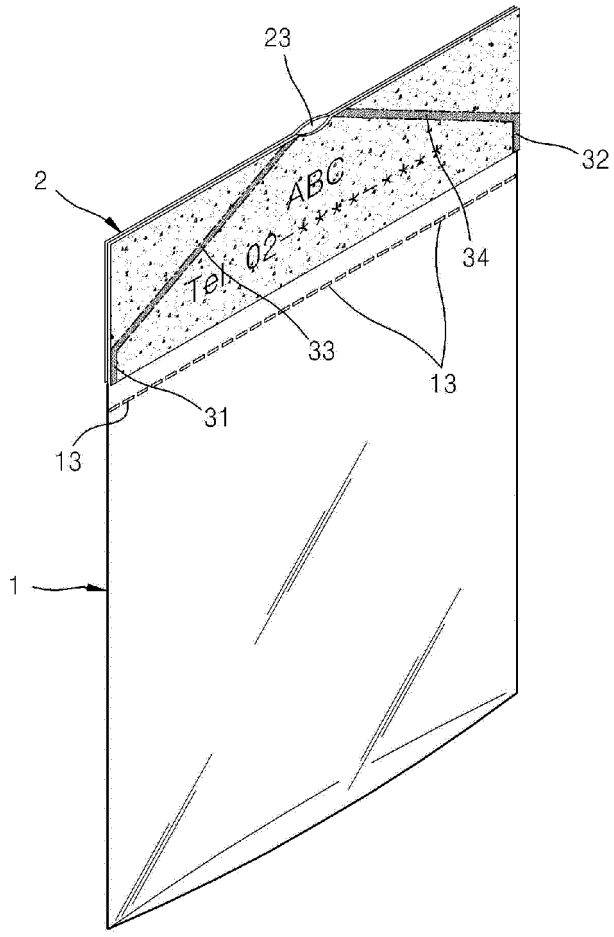
4. The production method according to claim 3, further comprising performing one of aroma treatment using a selected aroma, antimicrobial treatment and anti-wetting treatment on the surfaces of the support parts (200) through a dipping process.

5. The production method according to claim 3, wherein the support parts (200) are joined in advance to the inside of the vinyl member (110) during preparation of the vinyl member (110).

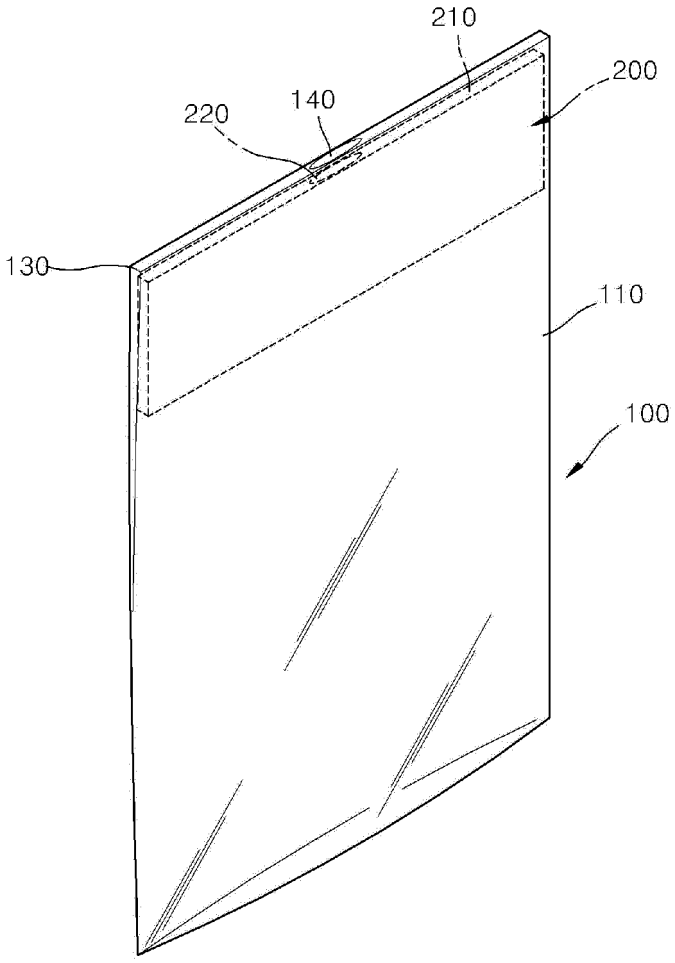
【Fig.1】



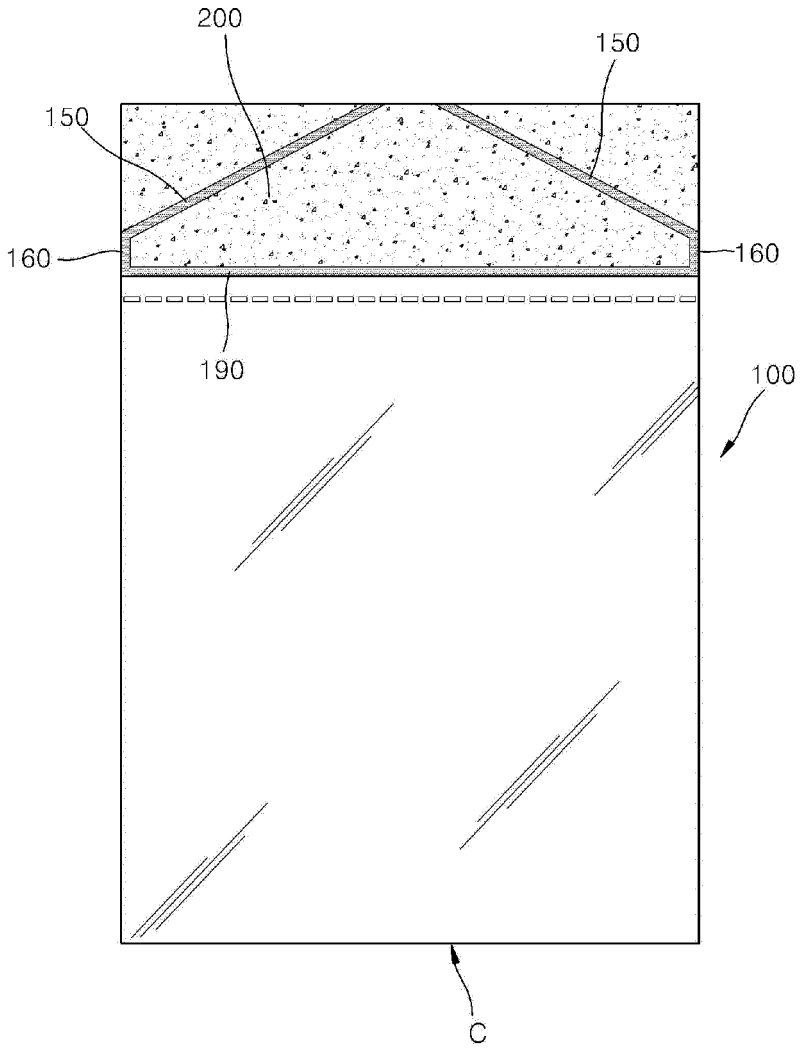
【Fig.2】



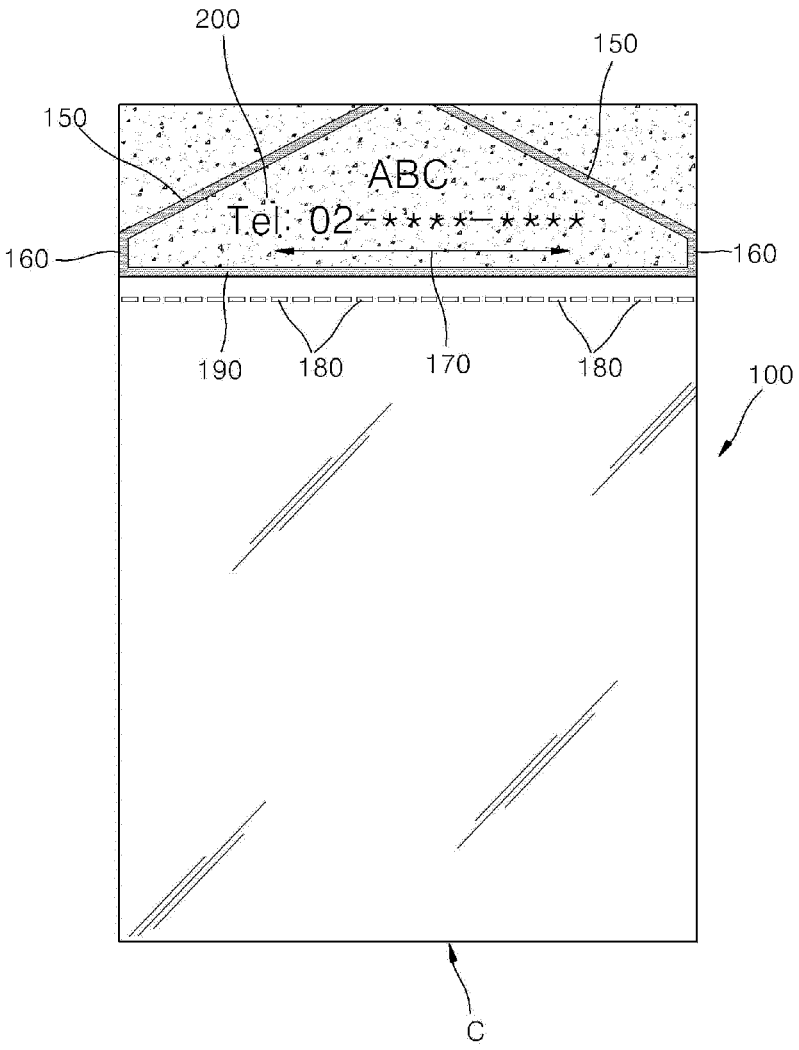
【Fig.3】



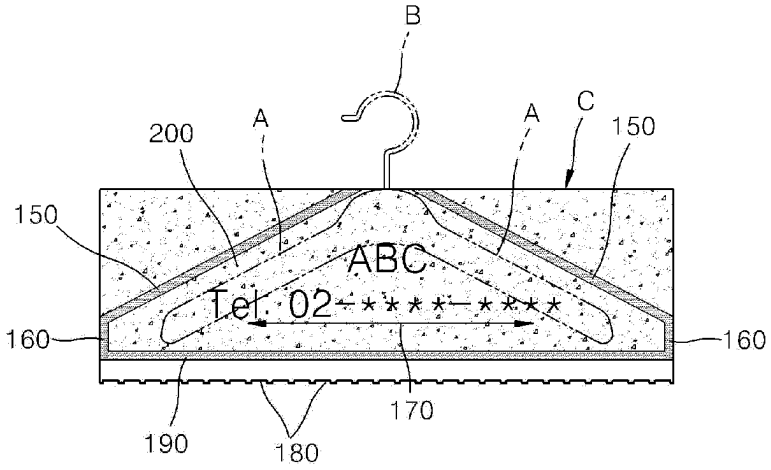
【Fig.4】



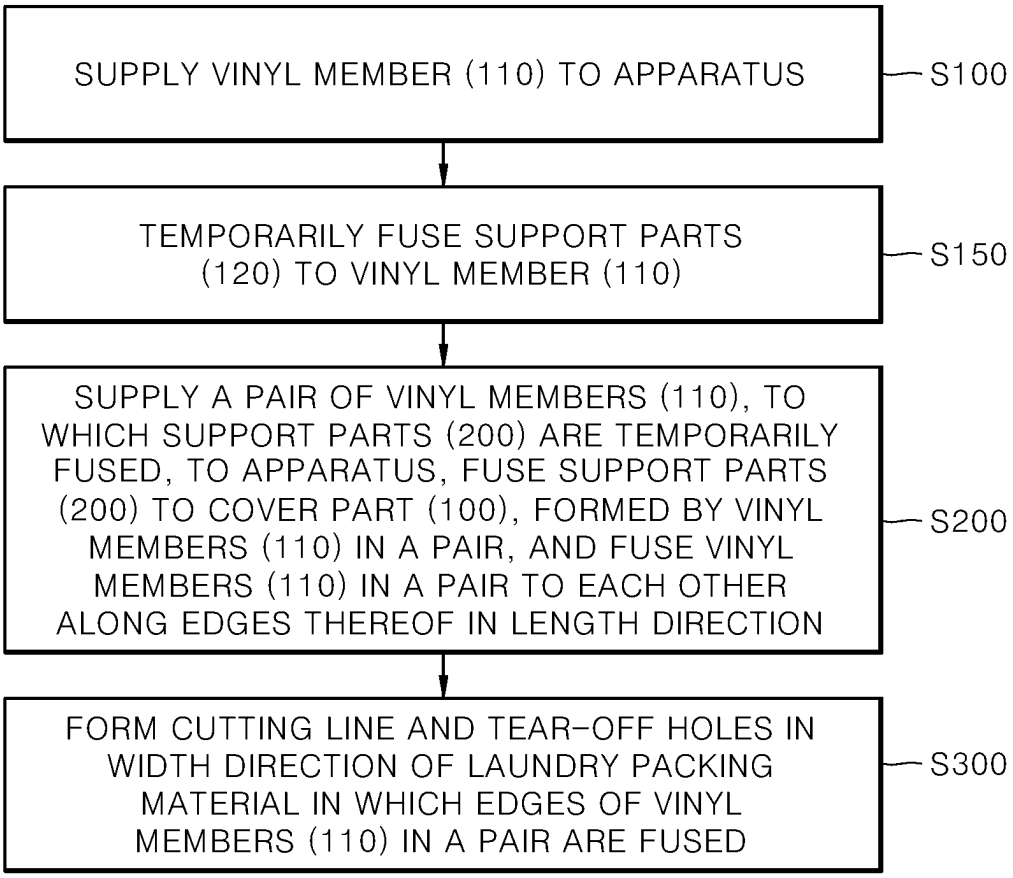
【Fig.5】



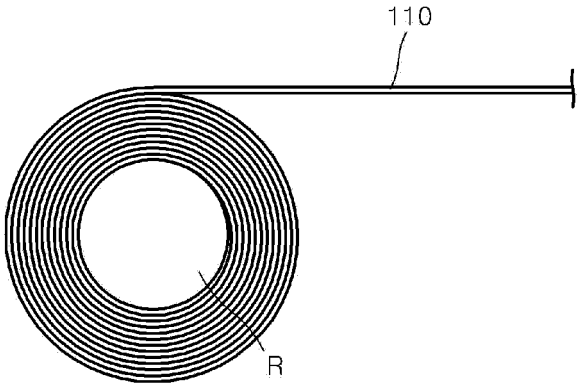
【Fig.6】


B
200
A
A
C
150
150
ABC
Tel. 02-****-****
160
160
190
180
170

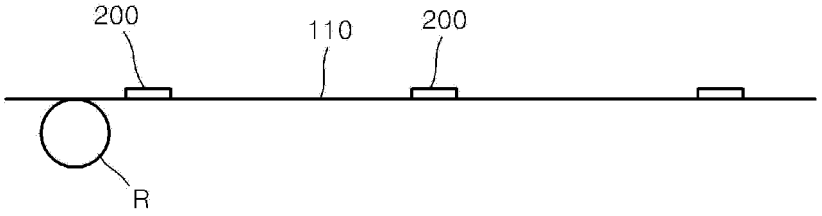
【Fig.7】


SUPPLY VINYL MEMBER (110) TO APPARATUS
S100
TEMPORARILY FUSE SUPPORT PARTS (120) TO VINYL MEMBER (110)
S150
SUPPLY A PAIR OF VINYL MEMBERS (110), TO WHICH SUPPORT PARTS (200) ARE TEMPORARILY FUSED, TO APPARATUS, FUSE SUPPORT PARTS (200) TO COVER PART (100), FORMED BY VINYL MEMBERS (110) IN A PAIR, AND FUSE VINYL MEMBERS (110) IN A PAIR TO EACH OTHER ALONG EDGES THEREOF IN LENGTH DIRECTION
S200
FORM CUTTING LINE AND TEAR-OFF HOLES IN WIDTH DIRECTION OF LAUNDRY PACKING MATERIAL IN WHICH EDGES OF VINYL MEMBERS (110) IN A PAIR ARE FUSED
S300

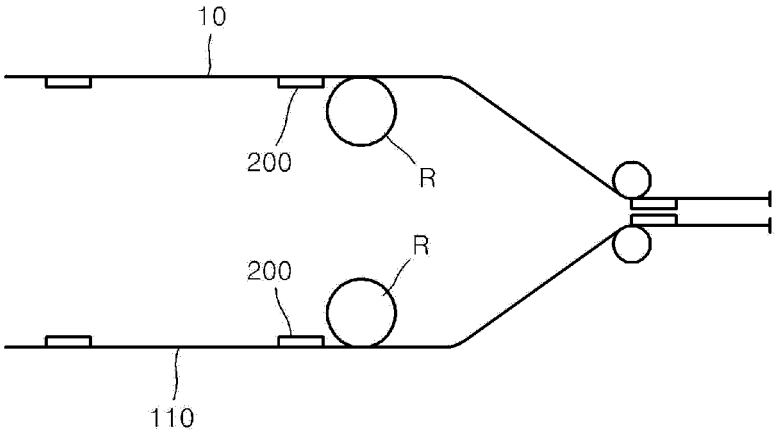
【Fig.8】



【Fig.9】



【Fig.10】



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2013/004152

A. CLASSIFICATION OF SUBJECT MATTER

B65D 85/18(2006.01)i, A47G 25/54(2006.01)i, B65B 51/10(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D 85/18; A47G 25/54; B65B 51/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: washing, cloth, cleaning, cover, packing

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 06-022262U (NIHON FILM KK) 22 March 1994 See paragraphs [0007]-[0018], figures 1-6.	3-4
A		1-2,5
Y	KR 10-1119530 B1 (CHAE, Soo Jin) 28 February 2012 See paragraphs [0014]-[0035], figures 1-7.	3-4
A		1-2,5
A	KR 20-0439481 Y1 (CHANG, Han Bong) 15 April 2008 See paragraphs [0017]-[0034], figures 1-4.	1-5
A	KR 20-0328824 Y1 (SIM, Seung Sub) 01 October 2003 See pages 2-3, figures 1-3.	1-5
A	KR 20-0374959 Y1 (MOON, Young Tea) 04 February 2005 See page 2, figures 1-5.	1-5

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2013/004152

Patent document cited in search report	Publication date	Patent family member	Publication date
JP 06-022262U	22/03/1994	NONE	
KR 10-1119530 B1	28/02/2012	KR 10-2010-0104559 A WO 2010-107253 A2 WO 2010-107253 A3	29/09/2010 23/09/2010 25/11/2010
KR 20-0439481 Y1	15/04/2008	NONE	
KR 20-0328824 Y1	01/10/2003	KR 10-2005-0003328 A	10/01/2005
KR 20-0374959 Y1	04/02/2005	NONE	

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Patent documents cited in the description

- KR 1119530 **[0007]**