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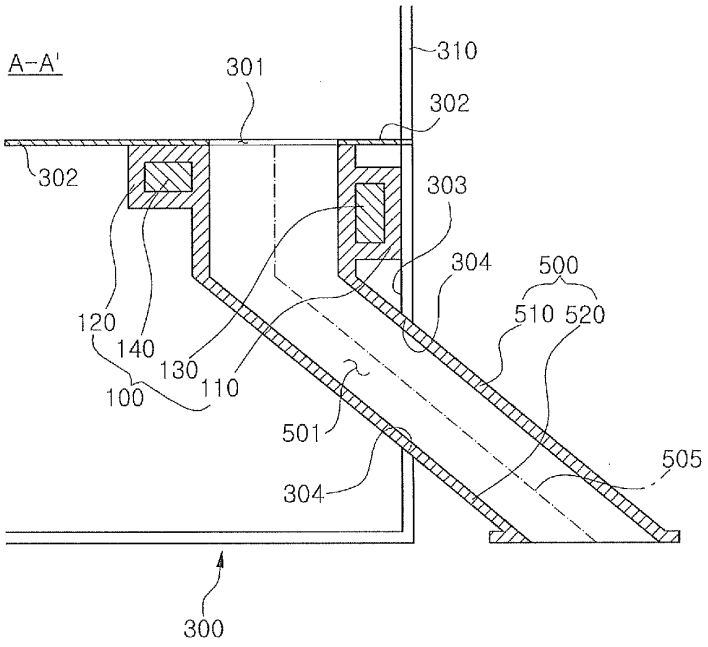
(54) HOPPER FOR MEDICINE WRAPPER

(57) Disclosed is a hopper for a medicine wrapper. A first unit is provided at a hopper body so that the hopper body can be detachably coupled with a body, and at least one second unit is detachably provided along both lateral-side edges of the hopper body to bisect the hopper body or to integrally couple the bisected parts of the hopper body with each other. The assembling work is simple, and the maintenance work such as a cleaning work or a washing work can be easily performed.

【Fig. 1】



EP 2 835 127 A1

Description

[Technical Field]

[0001] The present invention relates to a hopper for a medicine wrapper, and more particularly to a hopper for a medicine wrapper, in which the hopper can be simply attached to or detached from an exact position and easily maintained, for example cleaned and washed after the hopper is detached.

[Background Art]

[0002] A medicine wrapper is a device to receive medicines from a plurality of medicine cassettes, which have the medicines such as tablets, powders, or capsules according to types, and to consecutively pack the medicines in the unit of a dose. The medicine wrapper includes medicine cassettes provided in a body to receive medicines such as tablets or capsules having various sizes and various shapes. The medicine wrapper includes a hopper to collect medicines discharge from the medicine cassette, a printing unit to print various pieces of information on the surface of a pack having medicines therein, and a packing unit to pack the medicines collected by the hopper.

[0003] In particular, according to the related art, in the case of most medicine wrappers, a transfer hopper having a duct structure is mounted at a passage extending from a body to the hopper, and the passage is detachably coupled between the body and the hopper.

[0004] In general, the transfer hopper of the medicine wrapper allows various types of medicines to be transferred. Accordingly, when the transfer hopper of the medicine wrapper is used for a long time, different types of medicine powders may be mixed with each other in the process of transferring the medicine. Accordingly, the transfer hopper must be periodically detached from the body and cleaned.

[0005] However, the detaching or attaching of the transfer hopper according to the related art is inconvenient. In addition, since most transfer hoppers according to the related art have passages having narrow sectional areas, residues may not be sufficiently removed when removing an inner part of the passage.

[Disclosure]

[Technical Problem]

[0006] The present invention is made keeping in mind the above problem occurring in the related art, and an object of the present invention is to a hopper for a medicine wrapper, which can be simply detached from or attached to an exact position.

[0007] In addition, an object of the present invention is to provide a hopper for a medicine wrapper, which can be easily maintained, for example cleaned and washed after the hopper is detached.

[Technical Solution]

[0008] In order to accomplish the above objects, there is provided a hopper for a medicine wrapper, which includes a body provided therein with at least one partition, a hopper body detachably coupled with the partition and an internal surface of the body, including a passage to transfer a medicine in one direction, and bisected along both edges thereof in a transfer direction of the medicine, a first unit provided in the hopper body corresponding to one edge of a communication hole formed through the partition and the internal surface of the body, and at least one second unit detachably provided along each of both edges of the hopper body for decoupling or integral coupling of the hopper body.

[0009] In this case, the hopper body includes a first body defined by mutually combining a front surface and portions of both lateral sides of the hopper body that form the passage, and a second body defined by mutually combining a rear surface and remaining portions of the both lateral sides of the hopper body that form the passage. The first unit is provided on the front and rear surfaces, and the second unit is provided along a line on which both lateral-side edges of the first and second bodies and meet each other.

[0010] In this case, the first unit includes a first contact member extending from the hopper body facing the internal surface of the body, and a second contact member extending from the hopper body corresponding to one edge of the communication hole such that the second contact member is detachably coupled with the partition.

[0011] In addition, the first unit further includes a first magnet provided at the first contact member, and a secondmagnet provided at the second contact member.

[0012] Further, the at least one second unit includes at least one coupling protrusion protruding from both lateral sides of the hopper body, guide grooves formed along an outer circumference of the coupling protrusion while facing each other in a vertical direction, locking grooves formed along the outer circumference of the coupling protrusion while facing each other in the vertical direction and being perpendicular to the guide grooves, and a guide member extending from an edge of an end portion of the coupling protrusion and having notches connected with the guide grooves. The coupling protrusion, the guide grooves, and the guide member are bisected along a line to bisect the hopper body.

[0013] Further, the at least one second unit further includes a cover that has an inner diameter in a shape corresponding to a shape of an edge of the guide member, surrounds the guide member and the coupling protrusion, and is rotatable along the outer circumference of the coupling protrusion, a boss that protrude from an inner circumference of the cover in a shape corresponding to shapes of the guide groove and the locking groove, and at least one wing protruding from an outer circum-

ference of the cover.

[Advantageous Effects]

[0014] Through the above structure, the present invention has following effects.

[0015] First, according to the present invention, the first unit is provided at the hopper body so that the hopper body can be detachably coupled with the body, and the at least one second unit is detachably provided along both lateral-side edges of the hopper body to bisect the hopper body or to integrally couple the bisected parts of the hopper body with each other. Accordingly, the assembling work is simple, and the maintenance work such as a cleaning work or a washing work can be easily performed.

[0016] In addition, according to the present invention, when comparing with a conventional hopper structure, an additional coupling unit or tool is not required, and the first unit allows the hopper body to be mounted at an exact position of the body while inducing the surface contact throughput a wider area.

[Description of Drawings]

[0017]

FIG. 1 is a schematic view showing the state that a hopper body of a hopper for a medicine wrapper according to one embodiment of the present invention is mounted at a body.

FIG. 2 is a perspective view showing the hopper for the medicine wrapper according to one embodiment of the present invention.

FIG. 3 is an exploded perspective view showing an enlarged view of FIG. 1.

FIGS. 4 to 6 are schematic views showing a mutually coupling state of second units serving as main components of the present invention.

[Best Mode]

[0018] Hereinafter, an exemplary embodiment of the present invention will be described with reference to accompanying drawings.

[0019] FIG. 1 is a schematic view showing the state that a hopper body of a hopper for a medicine wrapper according to one embodiment of the present invention is mounted at a body. FIG. 2 is a perspective view showing the hopper for the medicine wrapper according to one embodiment of the present invention. FIG. 3 is an exploded perspective view showing an enlarged view of FIG. 1.

[0020] For reference, the terms "front surface" and "rear surface" used in the present invention represent right and left sides in accompanying drawings, particularly, FIG. 2.

[0021] Reference numeral 310, which is described in FIG. 1, represents an openable door.

[0022] According to the present invention, as shown in drawings, a hopper body 500 includes first units 100 so that the hopper bodies 500 are detachably coupled with a body 300, and detachably coupled with at least one second unit 200 provided along both edges of the hopper bodies 500 for the integral coupling or the decoupling of the hopper body 500. The body 300 has a space in which the hopper body 500 is embedded, and has at least one partition 302 provided therein.

[0023] Although not shown specifically, the body 300 provides a space including medicine cassettes to receive medicines such as tablets, or capsules having various sizes and shapes, a hopper to collect the medicines discharge from the medicine cassette, a printing unit to print various pieces of information on the surface of a pack having medicines therein, and a packing unit to pack the medicines collected by the hopper.

[0024] The hopper body 500 is detachably coupled with the partition 302 and an internal side 303 of the body 300 and includes a passage 501 to transfer the medicines in one direction. The hopper body 500 is bisected along both edges in a transfer direction of the medicines.

[0025] The first unit 100 is provided at the hopper body 500 corresponding to one edge of a communication hole 301 formed through the partition 302 and the internal side 303 of the body 300.

[0026] In this case, the passage 501 of the hopper body 500 communicates with the communication hole 301. The at least second unit 200 is detachably provided along both edges of the hopper body 500 for the coupling or the integral coupling of the hopper body 500.

[0027] Therefore, according to the present invention, through the above structure, the hopper body 500 can be detached from or attached to an exact position of the body 300 without a fixture, such as an additional positioning unit or a bolt, and a fixing tool.

[0028] The above embodiment is applicable to the present invention, and following various embodiments are applicable to the present invention.

[0029] As described above, the hopper body 500 is bisected or the bisected parts of the hopper body 500 are integrally coupled with each other as described above. The hopper body 500 has a structure including a first body 510 defined by mutually combining a front surface and portions of both lateral sides of the hopper body 500 constituting the passage 501 and a second body 520 defined by mutually combining a rear surface and remaining portions of the both lateral sides constituting the passage 501.

[0030] In this case, the first unit 100 is provided at the front and rear surfaces, and the second unit 200 is provided along a line on which both lateral-side edges of the first and second bodies 510 and 520 meet each other.

[0031] Meanwhile, in order to be detachably coupled with the body 300 as described above, the first unit 100 includes a first contact member 110 extending from the hopper body 500 facing the internal surface 303 of the

body 300, in more detail, the first body 510.

[0032] In addition, the first unit 100 includes a second contact member 120 extending from the hopper body 500, in more detail, the second body 520 corresponding to one edge of the communication hole 301 so that the second contact member 120 is detachably coupled with the partition 302.

[0033] In this case, preferably, a first magnet 130 is provided at the first contact member 110, and a second-magnet 140 is provided at the second contact member 120 so that the first unit 100 can be detachably coupled with the body 300, which mainly includes a metallic material, strongly.

[0034] Meanwhile, the second unit 200 is used to bisect the hopper body 500 in a direction in which the passage 501 is formed or combine the bisected parts of the hopper body 500 with each other as described above. In other words, the second unit 200 is bisected or the bisected parts of the second unit 200 are combined with each other by detachably coupling a cover 23 with a structure including a coupling protrusion along both edges of the hopper body, that is, a line to bisect the hopper body 500.

[0035] Hereinafter, the second unit 200 will be described in more detail. The coupling protrusion 210, a guide groove 212, a locking groove 214, and a guide member 220 extend from the hopper body 500, and the cover 230 including bosses 232 and wings 234 is detachably coupled with the above structure.

[0036] At least one coupling protrusion 210 protrudes from both lateral sides of the hopper body 500, guide grooves 212 are formed along an outer circumference of the coupling protrusion 210 while facing each other in a vertical direction, and locking grooves 214 formed along the outer circumference of the coupling protrusion 210 while facing each other in the vertical direction and being perpendicular to the guide groove 212.

[0037] In addition, the guide member 220 extends from an edge of an end portion of the coupling protrusion 210 and has notches 222 connected with the guide grooves 212.

[0038] In this case, the coupling protrusion 210, the guide groove 212, and the guide member 220 are bisected along a line to bisect the hopper body 500 as shown in FIG. 3.

[0039] Meanwhile, the cover 230 has an inner diameter having a shape corresponding to that of an edge of the guide member 220. The cover 230 surrounds the guide member 220 and the coupling protrusion 210, and is rotatable along the outer circumference of the coupling protrusion 210.

[0040] In this case, the bosses 232 protrude from an inner circumference of the cover 230 in the shape corresponding to those of the guide groove 212 and the locking groove 214. The wings 234 include at least one member protruding from an outer circumference of the cover 230.

[0041] Therefore, in order to couple the hopper body 500 with the body 300, a worker mutually couples the first and second bodies 510 and 520 with each other as shown in FIG. 4, and provides the boss 232 of the cover 230 along the guide groove 212 through the notch 222 as shown in FIG. 5, and grips the wing 234 to rotate the wing 234 clockwise or counterclockwise.

[0042] Thereafter, if the wings 234 are aligned in line with the bisection line 505 to bisect the hopper body 500 as shown in FIG. 6, the bosses 232 are locked and fixed to the locking grooves 214, so that the first and second bodies 510 and 520 are integrally coupled with each other.

[0043] In this case, an end portion of the boss 232 moves along the outer circumference of the coupling protrusion 210 so that the guide member 220 is provided in a space between the boss 232 and an inner top surface of the cover 230. Accordingly, after the boss 232 rotates along a preset track, the boss 232 is finally locked to the locking groove 214.

[0044] Subsequently, after the worker introduces the hopper body 500 into the body 300 via a slot 304 formed through the body 300 in communication with the inner part of the body 300, so the first and second contact members 110 and 120 of the first unit 100 are positioned on the internal surface 303 and the communication hole 301 of the body 300, respectively, so that the first and second contact members 110 and 120 make contact with the internal surface 303 and the edges of the communication hole 301. In this case, the first and second magnets 130 and 140 provided at the first and second contact members 110 and 120, respectively, are exactly attached to the internal surface 303 and the edges of the communication hole 301 of the body 300.

[0045] Meanwhile, when the worker cleans the hopper body 500 after detaching the hopper body 500 from the body 300, the worker rotates the cover 230 through the reverse operation to separate the cover 230 from the coupling protrusion 210 and the guide member 220 and to decouple the first and second bodies 510 and 520 from each other. In this case, the worker can sufficiently clean the internal surface of the first and secondbodies 510 and 520 forming the passage 501.

[Mode for Invention]

[0046] In this case, the coupling protrusion 210, the guide member 220, and the cover 230 serving as main components constituting the second unit 200 may have various shapes sufficient to smoothly perform mutually coupling and decoupling operations. Preferably, the coupling protrusion 210 protrudes in a cylindrical shape, the guide member 220 extends in a disc shape, and the inner part of the cover 230 is manufactured in the shape corresponding to those of the coupling protrusion 210 and the guide member 220.

[0047] As described above, according to the technical spirit of the present invention, the hopper for the medicine wrapper, which can be simply assembled according to a detachably coupling operation and easily maintained, for example cleaned and washed after the hopper is de-

tached.

[0048] Although an automatic medicine packing machine according to the present invention has been described 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.

Claims

1. A hopper for a medicine wrapper, the hopper comprising:

   a body provided therein with at least one partition;
   a hopper body detachably coupled with the partition and an internal surface of the body, including a passage to transfer a medicine in one direction, and bisected along both edges thereof in a transfer direction of the medicine;
   a first unit provided in the hopper body corresponding to one edge of a communication hole formed through the partition and the internal surface of the body; and
   at least one second unit detachably provided along each of both edges of the hopper body for decoupling or integral coupling of the hopper body.

2. The hopper of claim 1, wherein the hopper body comprises:

   a first body defined by mutually combining a front surface and portions of both lateral sides of the hopper body that form the passage; and
   a second body defined by mutually combining a rear surface and remaining portions of the both lateral sides of the hopper body that form the passage, and
   wherein the first unit is provided on the front and rear surfaces, and the second unit is provided along a line on which both lateral-side edges of the first and second bodies and meet each other.

3. The hopper of claim 1, wherein the first unit comprises: a first contact member extending from the hopper body facing the internal surface of the body; and a second contact member extending from the hopper body corresponding to the one edge of the communication hole such that the second contact member is detachably coupled with the partition.

4. The hopper of claim 3, wherein the first unit further comprises a first magnet provided at the first contact member, and a second magnet provided at the second contact member.

5. The hopper of claim 1, wherein the at least one second unit comprises:

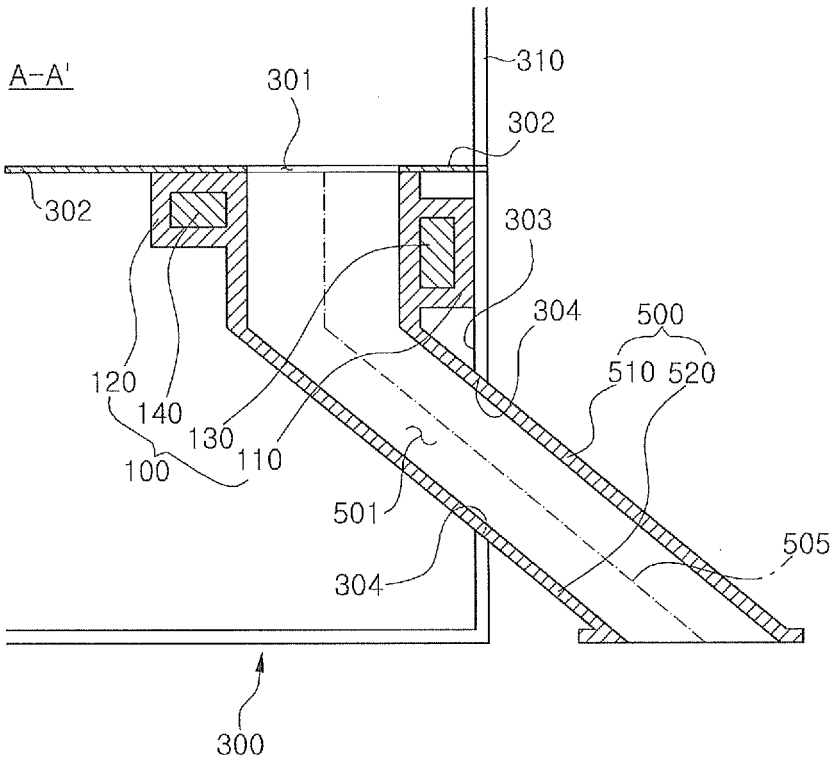
   at least one coupling protrusion protruding from the both lateral sides of the hopper body;
   guide grooves formed along an outer circumference of the coupling protrusion while facing each other in a vertical direction;
   locking grooves formed along the outer circumference of the coupling protrusion while facing each other in the vertical direction and being perpendicular to the guide grooves; and
   a guide member extending from an edge of an end portion of the coupling protrusion and having notches connected with the guide grooves, and
   wherein the coupling protrusion, the guide grooves, and the guide member are bisected along a line to bisect the hopper body.

6. The hopper of claim 7, wherein the at least one second unit further comprises:

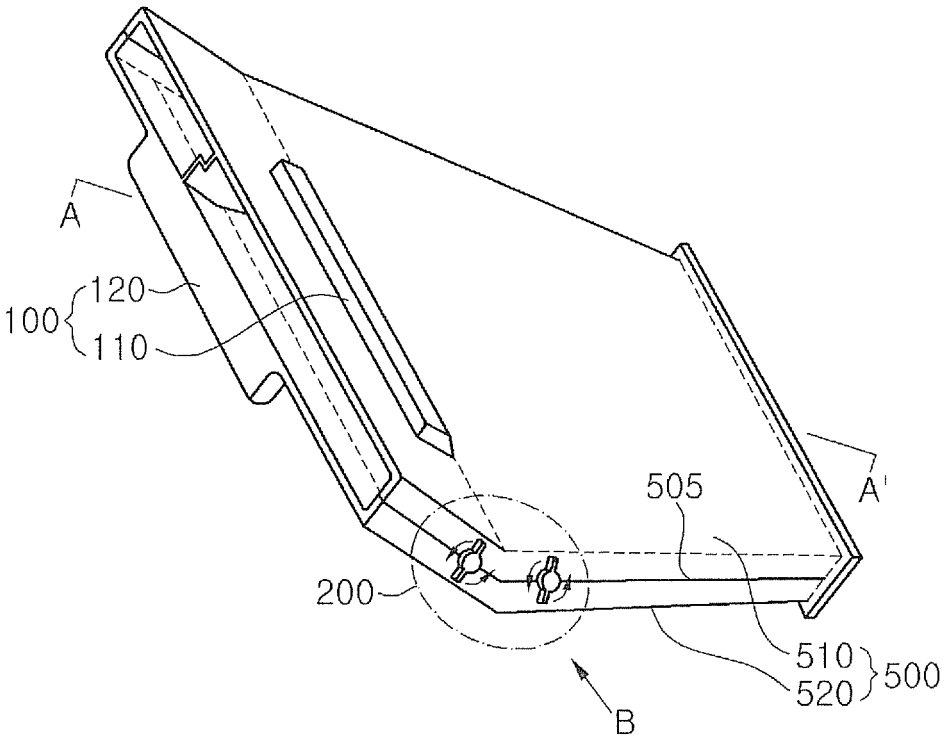
   a cover that has an inner diameter in a shape corresponding to a shape of an edge of the guide member, surrounds the guide member and the coupling protrusion, and is rotatable along the outer circumference of the coupling protrusion;
   a boss that protrudes from an inner circumference of the cover in a shape corresponding to shapes of the guide groove and the locking groove; and
   at least one wing protruding from an outer circumference of the cover.

【Drawings】

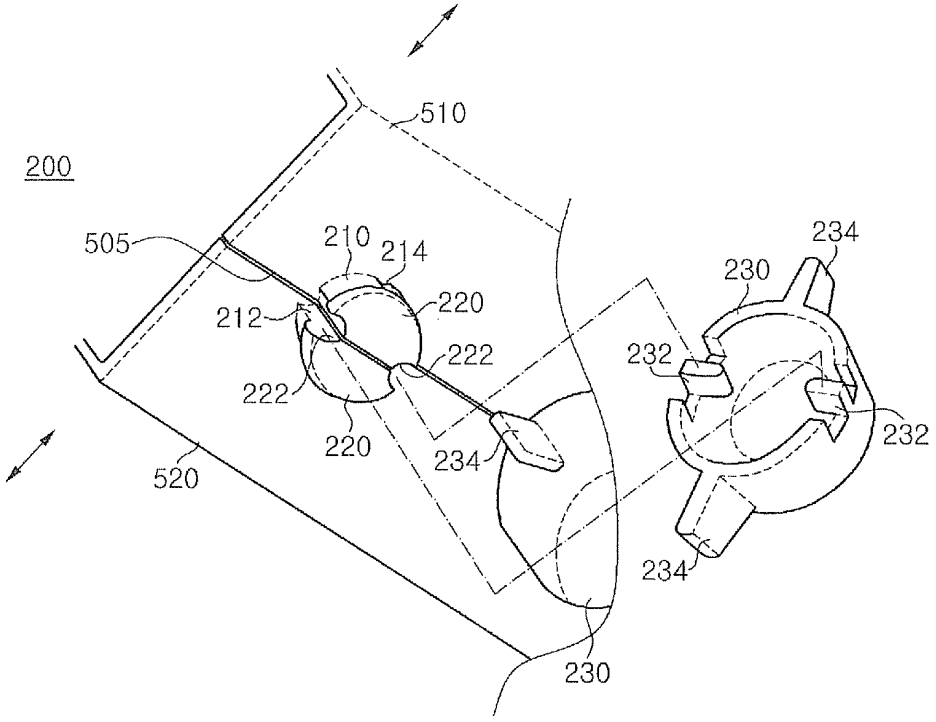
【Fig. 1】



【Fig. 2】



【Fig. 3】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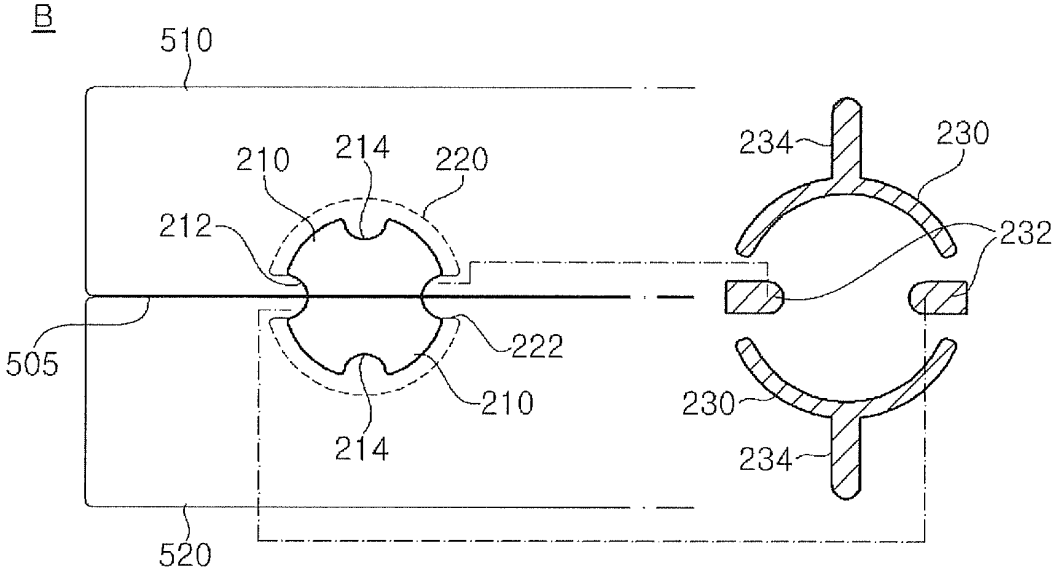
【Fig. 4】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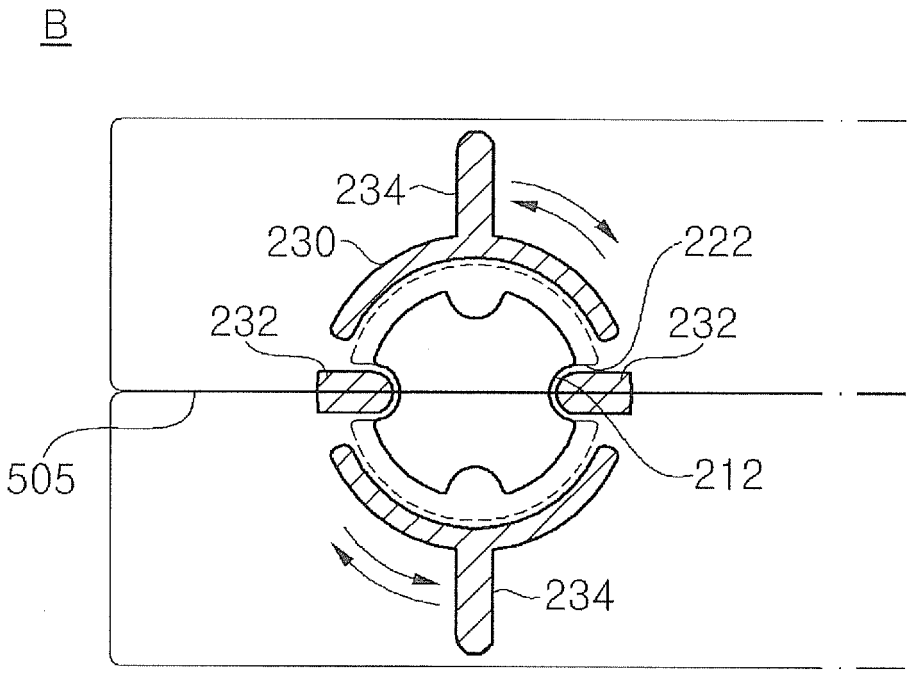
【Fig. 5】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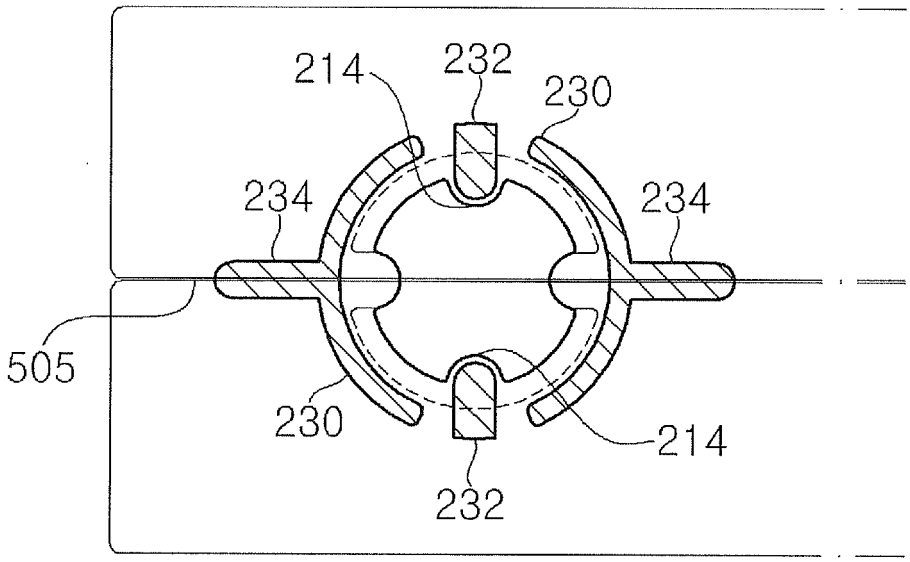
【Fig. 6】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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2013/002640

A. CLASSIFICATION OF SUBJECT MATTER

A61J 3/00(2006.01)i, B65B 1/04(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)

A61J 3/00; B65D 83/04; A61J 3/06; B60N 3/08; B65B 1/04; B65F 1/06; B02C 7/04

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: chemicals, hopper

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 20-0383556 Y1 (DONG BO SYSTEM CO., LTD. et al.) 06 May 2005 See page 4 and figures 2, 3.	1-6
A	KR 10-2009-0088612 A (EODIGITEK CO.,LTD) 20 August 2009 See the entire document.	1-6
A	JP 06-044633U (DELTA INDUSTRIES CO., LTD.) 14 June 1994 See the entire document.	1-6
A	KR 10-2002-0028535 A (NAM, Young Hee) 17 April 2002 See the entire document.	1-6
A	KR 10-2002-0090260 A (PARK, Sun Woo et al.) 02 December 2002 See the entire document.	1-6

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 JULY 2013 (17.07.2013)	**18 JULY 2013 (18.07.2013)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2013/002640

Patent document cited in search report	Publication date	Patent family member	Publication date
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Form PCT/ISA/210 (patent family annex) (July 2009)