(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 418 132 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.05.2004 Bulletin 2004/20

(51) Int Cl.[7]: **B65D 33/25**, B65D 33/34

(21) Application number: **03025200.1**

(22) Date of filing: **04.11.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(30) Priority: **07.11.2002 JP 2002323229**

(71) Applicant: **Daiwa Gravure Co., Ltd.**
Nagoya-shi, Aichi 462-0847 (JP)

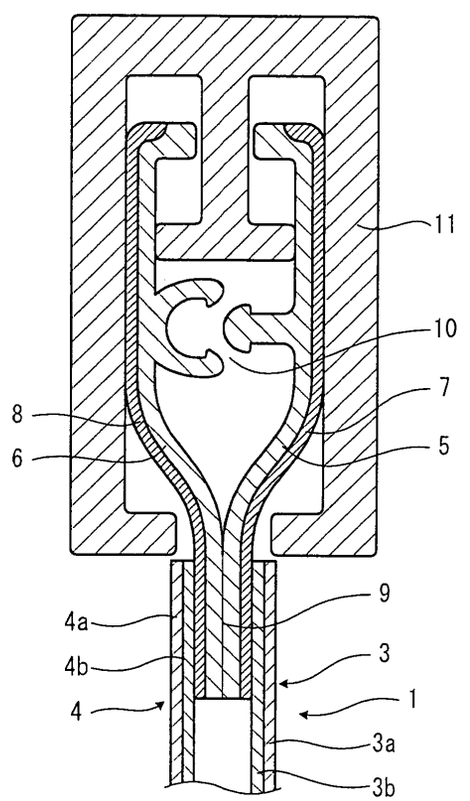
(72) Inventor: **Shibata, Yukihiko**
Kita-ku Nagoya-shi Aichi 462-0847 (JP)

(74) Representative: **Liebl, Thomas, Dipl.-Ing. et al**
Neubauer - Liebl
Patentanwälte
Fauststrasse 30
85051 Ingolstadt (DE)

(54) Packaging bag with zipper

(57) A packaging bag (1) with zipper is provided, which enables easy identification whether or not the bag has been opened. For this purpose, in the packaging bag with zipper, the lower end portion of a male zipper tape (5) and the lower end portion of a female zipper tape (6) are bonded to the inner faces of respective front side (3) and rear side (4) sheet sections, or vice versa, along the opening end of the bag. The opening end comes at the top when the bag is in an upright state. The respective zipper tapes are bonded together at a position (9) below the engaging section (10) of the zipper tapes with heat sealing strength of a degree that allows the zipper tapes to be manual peeling apart, in such a manner that they may be manually peeled apart by an interface peeling action, an interlayer peeling action, or a cohesive peeling action.

FIG. 2



EP 1 418 132 A1

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a packaging bag with a zipper.

Description of the Related Art

[0002] A conventional packaging bag with zipper of this kind is known from Utility Model Registration No. 2557256, for example. In other words, a packaging bag is conventionally known wherein an openable and closable zipper which performs a male and female coupling action is provided at opposing positions of a bag in the vicinity of the opening end thereof, and in an integral fashion with the bag.

[0003] In a packaging bag of the kind disclosed in Utility Model Registration No. 2557256 described above, which comprises an integrally provided openable and closable zipper performing a male and female coupling action, in most cases of a packaging bag with zipper which is not provided with a slider, the perimeter of the bag, including the edge adjacent to the opening end of the bag close to a location of the zipper, is closed by heat sealing. Thus, the bag cannot be opened by opening the zipper unless the heat seal section along the edge adjacent to the opening end of the bag is cut. There are also such bags, however, that are not heat sealed along the edge adjacent to the opening end of the bag close to the location of the zipper. Such bags can simply be opened by opening the zipper at a shop display cabinet, for instance. If the bag is then closed again after opening, it cannot be identified whether or not it has been opened, posing management problems.

[0004] Furthermore, in the case of a packaging bag with zipper that is provided with a slider, the zipper is provided along the opening end of the bag and a slider is provided movably in the longitudinal direction of the zipper, making it impossible to close the opening end of the bag by heat sealing. Hence similar management problems arise with this kind of packaging bags with zipper that are provided with a slider.

SUMMARY OF THE INVENTION

[0005] The present invention was devised to resolve the problems, an object thereof being to make it possible readily to identify whether or not a packaging bag with zipper has been opened.

[0006] In order to achieve the object, the present invention is devised as follows:

[0007] A packaging bag with zipper, in which the lower end portion of a male zipper tape and the lower end portion of a female zipper tape are bonded to the inner faces of respective front side and rear side sheet sections, or rear side and front side sheet sections, along the opening end of the bag. The upper end of the bag comes at the top when the bag is in an upright state, and the respective zipper tapes are bonded together at a position below the engaging section thereof, with heat sealing strength of a degree that allows the zipper tapes to be manually peeled apart, by means of an interface peeling action, an interlayer peeling action, or a cohesive peeling action.

[0008] In the packaging bag with zipper, either one of the zipper tapes is made from a hot melt type adhesive resin, and the other zipper tape is made from a polyethylene type resin or a polypropylene type resin of the same kind as a material forming the inner layers of the bag.

[0009] In the packaging bag with zipper, either one of the zipper tapes is made from a hot melt type adhesive resin, and both the outer face and the inner face of the other zipper tape are made from a polyethylene type resin or a polypropylene type resin of the same kind as a material forming the inner layer of the bag.

[0010] In the packaging bag with zipper, one of the zipper tapes is made from a hot melt type adhesive resin, the outer face of the other zipper tape is made from a polyethylene type resin or polypropylene type resin of the same type as the material forming the inner layers of the bag, and the inner face of the other zipper tape is made from a polyethylene type resin or polypropylene type resin of a different type from the material forming the inner layers of the bag.

[0011] In the packaging bag with zipper, the inner faces of both zipper tapes are made from a polyethylene type resin or polypropylene type resin, and a hot melt type adhesive resin section is provided on the inner face of one of the zipper tapes, at least in a bonding section formed by heat sealing in a position below the engaging section of the zipper tapes.

[0012] In the packaging bag with zipper, a hot melt type adhesive resin section that is to be bonded to the inner layer of the bag, is provided in at least the lower end portion of the outer face of the zipper tape made from a polyethylene type resin or a polypropylene type resin.

[0013] In the packaging bag with zipper, both zipper tapes are made from a resin containing a material comprising a random mixture of a straight-chain low-density polyethylene type resin and a polybutene-1 resin.

[0014] In the packaging bag with zipper, a resin section containing a material comprising a random mixture of a straight-chain low-density polyethylene type resin and a polybutene-1 resin is provided on the inner faces of both zipper tapes, at least in the bonding section formed by heat sealing below the engaging section of the zipper tapes.

[0015] In the packaging bag with zipper, the male zipper tape and the female zipper tape are respectively coloured with mutually different colours.

[0016] According to the foregoing, zipper tapes are

bonded together at a position below the engaging section of the zipper tapes, with heat sealing strength that allows the bonding section of the zipper tapes to be peeled apart by hand. Thus, if a user has mistakenly opened the zipper and peeled apart the bonding section of the zipper tapes, for example, it will be possible to confirm that the packaging bag has been opened. In particular, by colouring the male zipper tape and the female zipper tape, respectively with mutually different colours, the bonding section of the zipper tapes can be changed to a separate colour, by means of colour mixing, and if a user has mistakenly opened the zipper and peeled apart the bonding section of the zipper tapes, for example, the colour of the section will revert to the original colours of the respective zipper tapes. Thus, it is easy to identify whether or not the packaging bag has been opened.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a perspective view of a packaging bag with zipper according to a first embodiment of the present invention;
Fig. 2 is an enlarged sectional view of a principal part of this packaging bag with zipper;
Fig. 3 is an enlarged sectional view of the principal part of this packaging bag with zipper, showing the bag in an open state;
Fig. 4 is an enlarged sectional view of a principal part of a packaging bag with zipper according to a second embodiment, showing the bag in an open state;
Fig. 5 is an enlarged sectional view of a principal part of a packaging bag with zipper according to a third embodiment, showing the bag in an open state; and
Fig. 6 is an enlarged sectional view of a principal part of a packaging bag with zipper according to a fourth embodiment, showing the bag in an open state.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] In Fig. 1 to Fig. 3, numeral 1 denotes a packaging bag, and this packaging bag 1 is closed by heat sealing at three edges, namely, the lower end when the bag is in an upright state, and the two respective side edges. Numeral 2 denotes the heat seal section of the bag. Zipper tapes 5, 6 are provided in an integral fashion at the opening end of the bag which comes at the top when the packaging bag 1 is in an upright state, by heat sealing and bonding the lower end portion of a male zipper tape 5 and a female zipper tape 6 to the inner faces of respective sheet sections 3, 4 on the front side and rear side (or rear side and front side) of the bag 1. In other words, the zipper tapes 5 and 6 are provided in such a manner that they project from the upper end of the packaging bag 1.

[0019] The sheet sections 3, 4 forming the packaging bag 1 have a two-layer structure in which the outer layers 3a, 4a thereof are made from nylon film and the inner layers 3b, 4b are made from polyethylene film, and the male zipper tape 5 and female zipper tape 6 which are bonded to the inner faces of these respective sheet sections 3, 4 along the opening end of the packaging bag 1 are made from materials described below.

[0020] For example, taking the material of the male zipper tape 5 as A and the material of the female zipper tape 6 as B, then A is a hot melt type adhesive resin and B is a polypropylene type resin, and a polyethylene type resin layer 7 and a hot melt type adhesive resin layer 8 are formed respectively by combined extrusion on the material A forming the male zipper tape 5 and material B forming the female zipper tape 6, on the faces thereof which oppose the inner faces 3b, 4b of the respective sheet sections 3, 4. Thereupon, if the male zipper tape 5 and the female zipper tape 6 are heat sealed, respectively, onto the inner face of the sheet section 3 and the inner face of the sheet section, at a temperature of 180ºC, for example, a sealing time of one second, and a sealing pressure of 20 N/cm^2, then the polyethylene type resin layer 7 of the zipper tape 5 and the inner layer 3b of the polyethylene film of the sheet section 3 fuse together, and the hot melt type adhesive resin layer 8 of the zipper tape 6 fuses with the inner layer 4b of the polyethylene film of the sheet section 4. In this case, the polyethylene type resin layer 7 of the zipper tape 5 and the polyethylene film of the inner layer 3b of the sheet section 3 are of the same type and become completely fused together, and the hot melt type adhesive resin layer 8 of the zipper tape 6 and the polyethylene film of the inner layer 4b of the sheet section 4 are bonded together by a heat sealing strength of approximately 5 N/15 mm. In other words, it was found on the basis of experimentation, that the hot melt type adhesive resin has characteristics whereby, when heated, it bonds with polyolefin type resins, such as polyethylene, and has a heat sealing strength with polyolefin type resins of 5 N/15 mm or above.

[0021] Furthermore, in the packaging bag 1 with zipper according to the present embodiment, the respective zipper tapes 5, 6 are bonded together by heat sealing along a lower end in the width direction of the zipper portion when the packaging bag 1 is in an upright state, in such a manner that the zipper tapes can be peeled apart by an interface peeling action. Numeral 9 denotes a bonding section between the zipper tapes 5, 6. Since the material of the zipper tape 5 is a hot melt type adhesive resin, and the material of the zipper tape 6 is a polypropylene type resin, the heat sealing strength will be approximately 5 N/15 mm described above. This heat sealing strength of approximately 5 N/15 mm is of a degree that allows the zipper tapes to be peeled apart

readily by hand.

In the present embodiment, a blue colouring agent is incorporated into the hot melt type adhesive resin which is the material forming the zipper tape 5, and a yellow colouring agent is incorporated into the polypropylene type resin which is the material forming the zipper tape 6, so that when the respective zipper tapes 5, 6 are in a state of being bonded together by heat sealing, the colour of the bonding section becomes green, due to the mixing of the colours. Moreover, by fabricating both of the zipper tapes 5, 6 from a transparent material, and performing coloration of the polyethylene type resin layer 7 and the hot melt type adhesive resin 8 provided on the outer sides thereof, using a blue colouring agent and a yellow colouring agent, respectively, it is possible to make the colour of the bonding section a green colour, by mixing the colours, similarly to the foregoing, when the two zipper tapes 5, 6 are bonded together by heat sealing.

[0022] Since the engaging section 10 of the male zipper tape 5 and the female zipper tape 6 will deform if heat is applied thereto, only the lower end portions of the respective zipper tapes 5, 6 which overlap with the inner faces of the sheet sections 3, 4, below the engaging section 10, are bonded by heat sealing. In the drawings, 11 denotes a slider for opening and closing the zipper tapes 5, 6.

[0023] Various types of hot melt type adhesive resin are known, but in the present embodiment, it is possible to use, as a resin suitable for bonding the zipper tapes 5, 6 together in such a manner that they can be peeled apart by an interface peeling action, for example, a resin formed from a resin composition comprising at least one type of resin selected from a group comprising ethylene ethylacrylate copolymer comprising a main ingredient of ethylene vinyl acetate copolymer manufactured by Hirodine Corp., and petroleum resins, turpentine resins and rosin type resins.

[0024] Moreover, in the embodiment described above, the material of the male zipper tape 5 is stated as a hot melt type adhesive resin, and the material of the female zipper tape 6 is stated as a polypropylene type resin, but a reverse configuration is also possible. In this case, a hot melt type adhesive resin layer is formed on the male zipper tape 5, and a polyethylene type resin layer is formed on the female zipper tape 6.

[0025] Furthermore, with respect to the shape of the packaging bag 1, in addition to the embodiment described above, it is also possible to use a gusset type, butt-seam type, or standing pack type, or the like.

[0026] Moreover, in the embodiment described above, a slider is provided on the zipper, but it is of course also possible to implement the present invention with a zipper having no slider.

[0027] As described above, in the present embodiment, a product (a bag containing contents) is arranged in a store display cabinet in a state in which the lower end sections of respective zipper tapes 5, 6 are bonded together with heat sealing strength of a degree that allows the bonding section of the zipper tapes to be readily peeled apart by hand, at the height of the bonding section of the tapes to the sheet sections 3, 4 of the packaging bag 1. Thus, if a user has mistakenly opened the zipper and peeled apart the bonding section 9 of the zipper tapes 5, 6, the colour (green) of the bonding section 9 will revert to the colours of the respective zipper tapes 5, 6 (blue, yellow) or, if the zipper tapes 5, 6 are transparent, it will revert to the colours of the polyethylene type resin layer 7 and the hot melt type adhesive resin layer 8 provided on the outer sides thereof. Hence it will be possible to confirm that the packaging bag 1 has been opened.

[0028] If the lower end sections of the zipper tapes 5, 6 are bonded together in this manner with heat sealing strength of a degree that allows the bonding section of the zipper tapes to be peeled apart readily by hand, when a user buys a product and goes to extract the contents from the bag 1, he or she can extract the contents from the packaging bag 1 by opening the zipper and peeling apart the bonding section 9 between the zipper tapes 5, 6. In this case, the heat sealing strength of the bonding section 9 between the zipper tapes 5, 6 is approximately the same as the heat sealing strength between the inner face of the packaging bag 1 and the female zipper tape 6 that is made of a polypropylene type resin and has a hot melt type adhesive resin layer 8 provided on the surface thereof. But since the bonding section 9 is situated at the lower end section of the location of the zipper tapes, the female zipper tape 6 and the packaging bag 1 are not liable to be peeled apart when the bonding section 9 is peeled apart by means of the user's fingers.

[0029] In the present embodiment, the zipper tape 5 is coloured blue and the zipper tape 6 is coloured yellow, in such a manner that the heat-sealed bonding section becomes green in colour, but it is also possible to use other colour combinations. It is not necessarily required to perform colouring of the zipper tapes 5, 6, and when the bonding section 9 of the zipper tapes 5, 6 has been peeled apart, it can be readily identified that the packaging bag 1 has been opened.

[0030] Moreover, in the embodiment described above, the two zipper tapes 5, 6 are bonded together in such a manner that they can be peeled apart by means of an interface peeling action, with heat sealing strength of a degree that permits the tapes to be peeled apart manually, at a position below the engaging section 10 of the zipper tapes 5, 6. It is also possible to bond the zipper tapes together by means of an interlayer peeling action or a cohesive peeling action. For example, as a hot melt type adhesive resin used for forming a cohesive peel, it would be suitable to use a polymer alloyed resin containing a polyolefin known as VMX (registered trademark) manufactured by Mitsubishi Chemical Corp. as a main ingredient. The polymer alloyed resin essentially consists of a multi-component polymer including a poly-

olefin resin which is grafted with a radical polymerisation monomer and contains a non-crystalline vinyl polymer in a uniform manner, and a polymer including polyolefin dispersed with styrene in the dispersion phase of polyolefin.

[0031] Furthermore, in the embodiment described above, the packaging bag 1 is made from a synthetic resin fabricated from sheet sections 3, 4 having a two-layer structure comprising nylon film in the outer layers 3a, 4a and polyethylene film in the inner layers 3b, 4b, but the materials used are not limited in particular to these. In other words, provided that, at the least, a synthetic resin film such as a polyethylene film or a polypropylene film, or the like, is used to fabricate the inner layers, due to the requirements of heat sealing, it is possible to use a material other than a synthetic resin, such as aluminium foil, paper, rayon paper, or the like, as a material to be laminated on the outer sides of the inner layers.

[0032] Moreover, in the embodiment described above, in the male zipper tape 5 made from a hot melt type adhesive resin and the female zipper tape 6 made from a propylene type resin, a polyethylene type resin layer 7 and a hot melt type adhesive resin layer 8 are formed respectively on the faces opposing the inner layers 3b, 4b of the respective sheet sections 3, 4 but whilst the hot melt type adhesive resin layer 8 provided on the side of the female zipper tape 6 made from a polypropylene type resin is required, it is possible to omit the polyethylene type resin layer 7 provided on the side of the male zipper tape 5 made from a hot melt type adhesive resin. Moreover, it is also possible to make the male zipper tape or the female zipper tape from a hot melt type adhesive resin, and to make the other zipper tape from a polyethylene type resin, and in this case, since the other zipper tape made from a polyethylene type resin is of the same type as the polyethylene film on the inner layer 3b of the sheet section 3, it will fuse completely with same, and the zipper tape made from a hot melt type adhesive resin and the polyethylene film on the inner layer 4b of the sheet section 4 will be bonded together by a heat sealing strength of approximately 5 N/15 mm, similarly to the embodiment described above. Moreover, the heat sealing strength between the zipper tapes may also be approximately 5 N/15 mm, and the two zipper tapes may be bonded together on the basis of an interface peeling action, as in the embodiment described above, or a interlayer peeling action, or a cohesive peeling action. Furthermore, a composition may also be adopted wherein one of the zipper tapes is made from a hot melt type adhesive resin, and the outer face of the other zipper tape is made from a polyethylene type resin, whilst the inner face thereof is made from a polypropylene type resin which is different to the material forming the inner layer of the packaging bag 1.

[0033] Furthermore, in the embodiment described above, the zipper tapes 5, 6 are bonded by heat sealing to the inner faces of the respective sheet sections 3, 4 of the packaging bag 1, but it is also possible for the two zipper tapes 5, 6 to be installed on the inner faces of the respective sheet sections 3, 4 of the packaging bag 1 by being laid respectively over the inner faces of the sheet sections 3, 4 of the packaging bag 1 in a sheet state, and bonded to same, whilst the zipper tapes 5, 6 are in a molten state directly after molten extrusion.

[0034] Fig. 4 shows a second embodiment of the present invention.

[0035] The second embodiment illustrated in Fig. 4 is a modification of the first embodiment shown in Fig. 1 - Fig. 3. Whereas in the first embodiment, the male zipper tape 5 and the hot melt type adhesive resin layer 8 provided on the outer face of the female zipper tape 6 are made entirely from a hot melt type adhesive resin, in the second embodiment, the male zipper tape 5 is made from a polyethylene type resin of the same kind as the inner layer 3b of the packaging bag 1, and the female zipper tape 6 is made from a polypropylene type resin, a section 12 made from a hot melt type adhesive resin being provided on the inner face of the male zipper tape 5 only in the vicinity of the bonding section 9 between the zipper tapes 5, 6, and a section 13 made from a hot melt type adhesive resin bonded to the inner layer 4b of the packaging bag 1 being provided on the outer face of the lower end section of the female zipper tape 6. It is also possible to provide a section made from a polyethylene type resin of the same kind as the inner layer 4b of the packaging bag 1, instead of the section 13 made from a hot melt type adhesive resin. Even if a hot melt type adhesive resin section is provided in a minimum necessary area at a position below the engaging section 10 of the zipper tapes 5, 6 in this way, similar effects to those of the first embodiment can still be obtained. In this embodiment, if the male zipper tape 5 is made from a hot melt type adhesive resin, the section 12 made from a hot melt type adhesive resin can be omitted.

[0036] Fig. 5 shows a third embodiment of the present invention.

[0037] In the third embodiment shown in Fig. 5, the male zipper tape 5 and the female zipper tape 6 are both made from a polyethylene type resin of the same type as forming the inner layers 3b, 4b of the packaging bag 1, and a section 14 made from a hot melt type adhesive resin is provided on the inner face of the female zipper tape 6, only in the vicinity of the bonding section 9 of the zipper tapes 5, 6.

[0038] Furthermore, both the zipper tapes 5, 6 are made from a resin containing a random mixture of a straight-chain type low-density polyethylene resin and a polybutene-1 resin, for example, as means for bonding the zipper tapes 5, 6 together in a readily peelable manner, in a position below the engaging section 10, with heat sealing strength of a degree that allows the zipper tapes to be manually peeled apart. Thus, the bonding section 9 along the lower end section of the zipper tapes 5, 6 fabricated from the foregoing material will not couple

completely, and hence it will be possible to peel apart the bonding section 9 of the zipper tapes 5, 6, readily and manually, by means of a cohesive peeling action.

[0039] Fig. 6 shows a fourth embodiment of the present invention.

[0040] In the fourth embodiment shown in Fig. 6, both of the zipper tapes 5, 6 are made from a polyethylene type resin of the same type as forming the inner layers 3b, 4b of the packaging bag 1, and resin sections 15, 16 containing a resin comprising a random mixture of a straight-chain low-density polyethylene type resin and a polybutene-1 resin are provided on the inner faces of the two zipper tapes 5, 6 at least in the vicinity of the bonding section 9 located below the engaging section 10 of the zipper tapes 5, 6. This also causes the bonding section 9 in the lower end section of the zipper tapes 5, 6 not to couple together completely, and hence it will be possible to peel apart the bonding section 9 of the zipper tapes 5, 6 readily and manually by means of a cohesive peeling action.

[0041] In the embodiment illustrated in the drawings, the respective zipper tapes 5, 6 may have a structure comprising three or more layers. In other words, it is possible to interpose between the inner face and the outer face of the zipper tapes 5, 6, by using a adhesive resin, a material other than a polyethylene type resin or a polypropylene type resin, a hot melt type adhesive resin, or a resin containing a random mixture of a straight-chain type low-density polyethylene type resin and a polybutene-1 resin.

[0042] Furthermore, in the foregoing description, the bonding section 9 of the zipper tapes 5, 6 is bonded with a heat seal strength of approximately 5 N/15 mm, but it may be sufficient if the heat sealing strength is 1 N/15 mm or above.

Claims

1. A packaging bag with zipper, in which a lower end portion of a male zipper tape and a lower end portion of a female zipper tape are bonded to inner faces of respective front side and rear side sheet sections, or rear side and front side sheet sections, along an opening end of the bag, the opening end being located at an upper en of the bag when the bag is in an upright state, wherein

   the respective zipper tapes are bonded together at a position below an engaging section of the zipper tapes, with heat sealing strength of a degree that allows the bonded zipper tapes to be manually peeled apart, by means of an interface peeling action, an interlayer peeling action, or a cohesive peeling action.

2. The packaging bag with zipper according to claim 1, wherein one of the zipper tapes is made from a hot melt type adhesive resin, and the other zipper tape is made from a polyethylene type resin or polypropylene type resin of a same kind as a material forming inner layers of the bag.

3. The packaging bag with zipper according to claim 1, wherein either one of the zipper tapes is made from a hot melt type adhesive resin, and both the outer face and the inner face of the other zipper tape are made from a polyethylene type resin or a polypropylene type resin of a same kind as a material forming the inner layer of the bag.

4. The packaging bag with zipper according to claim 1, wherein one of the zipper tapes is made from a hot melt type adhesive resin, and the other zipper tape is made to have an outer face made from a polyethylene type resin or polypropylene type resin of a same kind as a material forming inner layers of the bag, and to have an inner face made from a polyethylene type resin or polypropylene type resin of a different kind from the material forming the inner layers of the bag.

5. The packaging bag with zipper according to claim 1, wherein the inner faces of both zipper tapes are made from a polyethylene type resin or polypropylene type resin, and a hot melt type adhesive resin section is provided on the inner face of one of the zipper tapes, at least in a bonding section formed by heat sealing below the engaging section of the zipper tapes.

6. The packaging bag with zipper according to claim 1, wherein a hot melt type adhesive resin section that is to be bonded to the inner layer of the bag, is provided in at least the lower end portion of the outer face of the zipper tape made from a polyethylene type resin or a polypropylene type resin.

7. The packaging bag with zipper according to claim 1, wherein both zipper tapes are made from a resin containing a material comprising a random mixture of a straight-chain low-density polyethylene type resin and a polybutene-1 resin.

8. The packaging bag with zipper according to claim 1, wherein a resin section containing a material comprising a random mixture of a straight-chain low-density polyethylene type resin and a polybutene-1 resin is provided on the inner faces of both zipper tapes, at least in a bonding section formed by heat sealing below the engaging section of the zipper tapes.

9. The packaging bag with zipper according to claim 1, wherein the male zipper tape and the female zipper tape are respectively coloured with mutually different colours.

FIG. 1

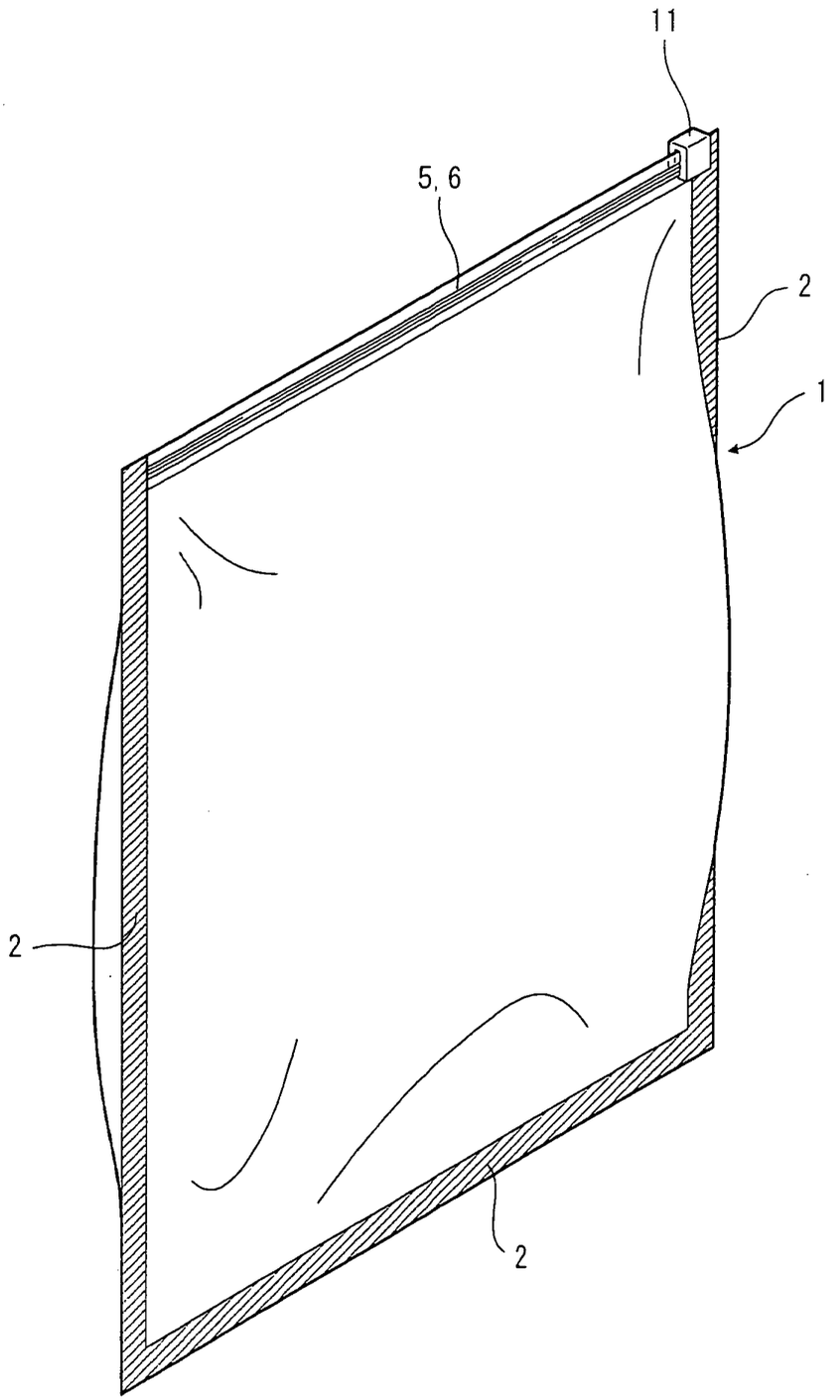


FIG. 2

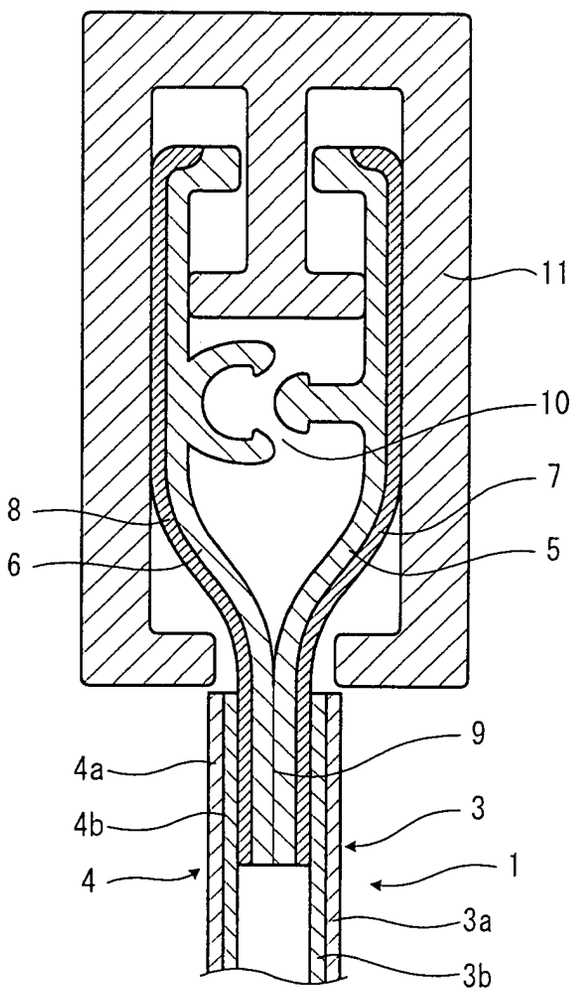


FIG. 3

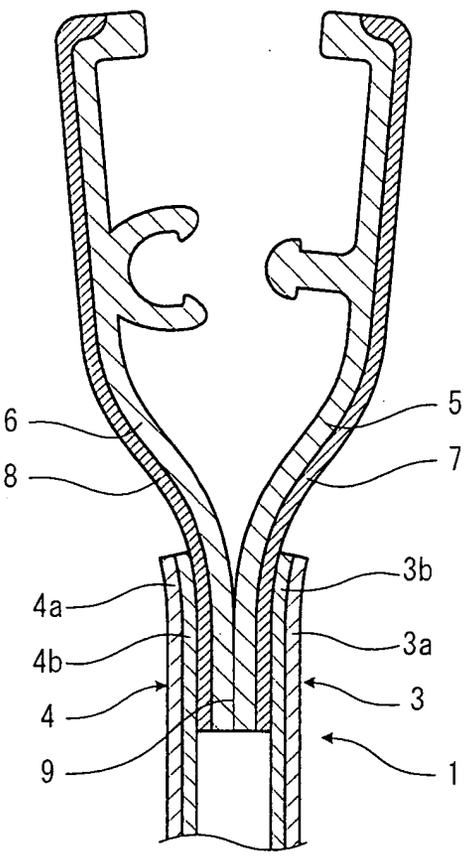


FIG. 4

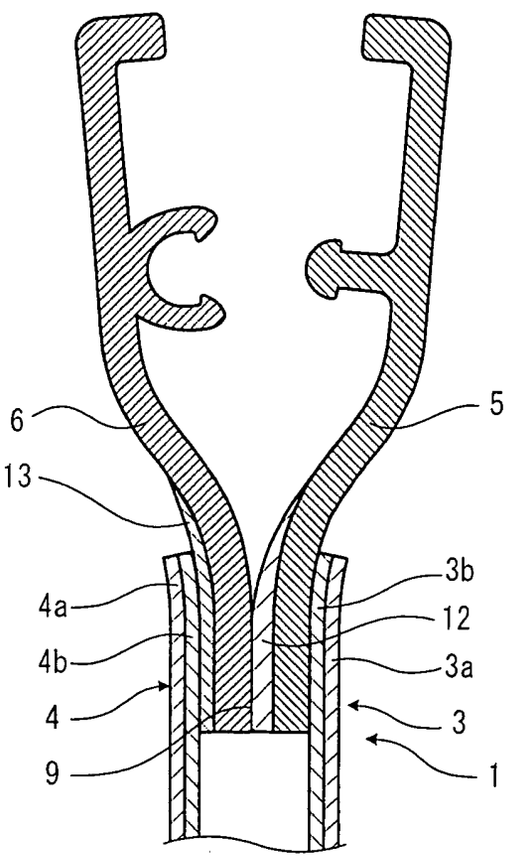


FIG. 5

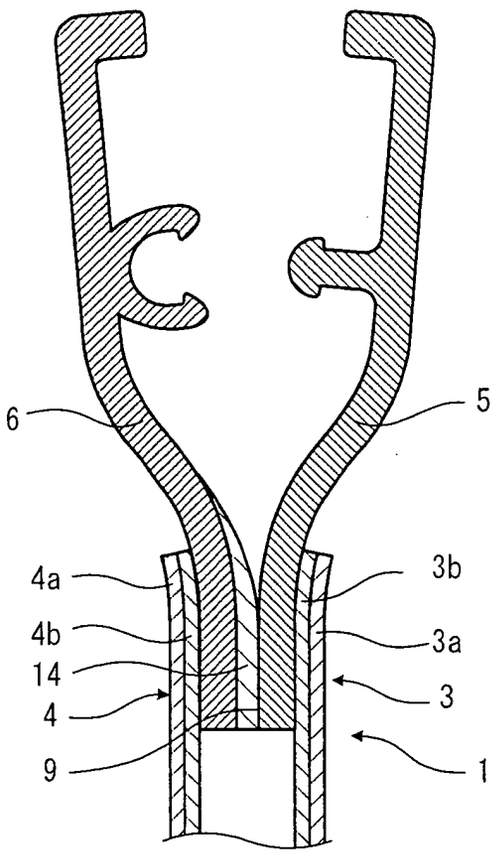
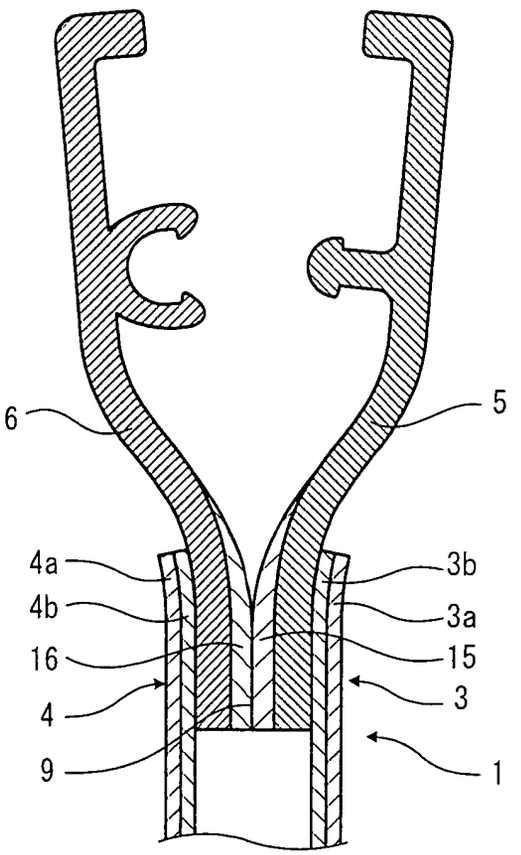


FIG. 6



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 02 5200

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	EP 1 132 310 A (REYNOLDS CONSUMER PROD) 12 September 2001 (2001-09-12) * column 5, line 16 - column 8, line 18; figures 3-5 *	1,5,6,9 2-4,7	B65D33/25 B65D33/34
Y	US 5 887 980 A (MAY TIMOTHY J) 30 March 1999 (1999-03-30) * column 13, line 59 - column 15, line 26; figures 9,10 *	2-4	
Y	US 4 710 968 A (BORCHARDT MICHAEL G ET AL) 1 December 1987 (1987-12-01) * column 11, line 25 - column 13, line 46 *	7	
A	US 5 701 996 A (ODAKA HIROSHI ET AL) 30 December 1997 (1997-12-30) * column 3, line 41 - line 49 *	1,8	
X	US 5 525 363 A (HERBER TERRENCE W ET AL) 11 June 1996 (1996-06-11) * column 4, line 64 - column 6, line 49; figures 3-5 *	1-3	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D
A	EP 0 371 402 A (IDEMITSU PETROCHEMICAL CO) 6 June 1990 (1990-06-06) * the whole document *	1-4	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 February 2004	Pernice, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 02 5200

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-02-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1132310 A	12-09-2001	EP 1132310 A2	12-09-2001
		JP 2001315806 A	13-11-2001
US 5887980 A	30-03-1999	US 5725312 A	10-03-1998
		US 5470156 A	28-11-1995
		US 5509735 A	23-04-1996
		US 5489252 A	06-02-1996
		US 5551127 A	03-09-1996
		US 5647671 A	15-07-1997
		US 5486051 A	23-01-1996
		US 5513915 A	07-05-1996
		US 5893645 A	13-04-1999
		US 5904425 A	18-05-1999
US 4710968 A	01-12-1987	AU 613306 B2	01-08-1991
		AU 6259686 A	12-03-1987
		CA 1286095 C	16-07-1991
		DE 3678089 D1	18-04-1991
		EP 0218565 A1	15-04-1987
		ES 2001674 A6	01-06-1988
		NZ 217539 A	26-02-1991
		NZ 227789 A	26-02-1991
		US 4778282 A	18-10-1988
US 5701996 A	30-12-1997	JP 7309351 A	28-11-1995
		CN 1122216 A ,B	15-05-1996
		DE 69506167 D1	07-01-1999
		DE 69506167 T2	06-05-1999
		EP 0683105 A1	22-11-1995
		TW 397051 Y	01-07-2000
US 5525363 A	11-06-1996	AU 673209 B2	31-10-1996
		AU 5388594 A	28-07-1994
		AU 6808896 A	19-12-1996
		AU 6808996 A	19-12-1996
		CA 2112850 A1	20-07-1994
		CN 1092730 A	28-09-1994
		EP 0608123 A1	27-07-1994
		JP 7017504 A	20-01-1995
		NZ 250690 A	28-05-1996
		US 5519982 A	28-05-1996
		AT 128686 T	15-10-1995
		AU 644288 B2	02-12-1993
		AU 1637392 A	03-12-1992
		CA 2069030 A1	01-12-1992
		CN 1067414 A ,B	30-12-1992

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 02 5200

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-02-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5525363 A		DE 69205214 D1	09-11-1995
		DE 69205214 T2	02-05-1996
		DK 516393 T3	12-02-1996
		EP 0516393 A1	02-12-1992
		ES 2080446 T3	01-02-1996
		GR 3018530 T3	31-03-1996
		HK 1896 A	12-01-1996
		JP 6092362 A	05-04-1994
		MX 9202531 A1	01-11-1992
		NZ 242959 A	26-10-1994
EP 0371402 A	06-06-1990	JP 2152662 A	12-06-1990
		JP 2750382 B2	13-05-1998
		AU 632517 B2	07-01-1993
		AU 4545589 A	07-06-1990
		DE 68915403 D1	23-06-1994
		DE 68915403 T2	01-09-1994
		EP 0371402 A2	06-06-1990
		KR 9707119 B1	02-05-1997
		US 5004356 A	02-04-1991

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82