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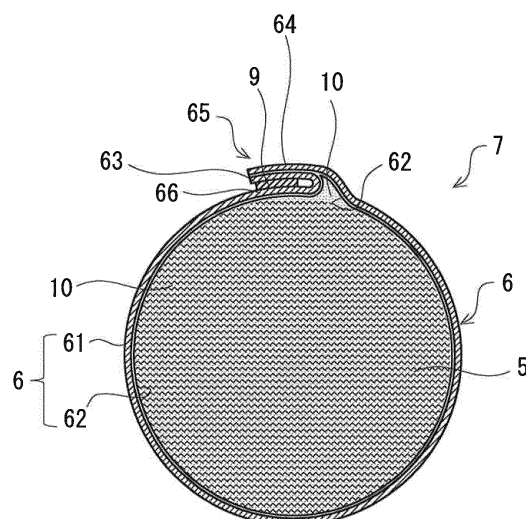
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(54) **END-JOINING STRUCTURE OF ROLL PAPER IN ROD-SHAPED SMOKING ARTICLE AND FILTER FOR ROD-SHAPED SMOKING ARTICLE**

(57) To provide a technique for suppressing, as compared to conventional techniques, peeling of a joining part of end part areas of a wrapping paper that wraps a wrap target part of a rod-shaped smoking article. Provided is an end part joining structure of a wrapping paper wrapped along a circumferential direction of a wrap target part of a rod-shaped smoking article. The wrapping paper has a pair of a first end part area and a second end part area that extend along an axial direction of the wrap target part, is formed into a cylindrical shape by joining the first end part area and the second end part area, and includes a butt seam part where inner faces of the first end part area and the second end part area are placed opposite to and on top of each other. The butt seam part is folded back toward a wrap part adjacent to the butt seam part and wrapping the wrap target part, and is fixed while covering the wrap part.

FIG. 4



Description

Technical Field

[0001] The present invention relates to an end part joining structure of a wrapping paper of a rod-shaped smoking article, and a filter of a rod-shaped smoking article.

Background Art

[0002] Known wrapping (rolling) papers of rod-shaped smoking articles such as a cigarette include: wrapping papers for filter, such as a wrapping paper that wraps a filter material of a filter of a rod-shaped smoking article, and a tipping paper that integrally wraps together a filter and a tobacco rod; and a cigarette paper for rod that wraps tobacco of a tobacco rod. In a production process of a rod-shaped smoking article, these wrapping papers used for a rod-shaped smoking article are formed into a cylindrical shape by being wrapped along the circumferential direction of the wrap target part, and then being joined by placing end areas thereof on top of one another and bonding them. In a conventional end part coupling structure of a wrapping paper, an inner face of one end part area of a wrapping paper wrapped around a wrap target part of a rod-shaped smoking article is placed on top of an outer face of the other end basin thereof, and the overlapping end part areas are bonded by an adhesive.

[0003] [Patent document 1] National Publication of International Patent Application No. 2008-539717

Summary of Invention

Technical Problem

[0004] However, when a rod-shaped smoking article is deformed by application of external force during storage, for example, the conventional end part joining structure of a wrapping paper may cause peeling of the bonded part of the end part areas of the wrapping paper.

[0005] The present invention has been made in view of the foregoing, and aims to provide a technique for suppressing, as compared to conventional techniques, peeling of a joining part of end part areas of a wrapping paper that wraps a wrap target part of a rod-shaped smoking article.

Solution to Problem

[0006] In order to solve the above problem, the present invention provides a wrapping paper wrapped along a circumferential direction of a wrap target part of a rod-shaped smoking article, in which: inner faces of a first end part area and a second end part area are placed opposite to and on top of each other to form a butt seam part; and the butt seam part is folded back toward a wrap part adjacent to the butt seam part and wrapping the wrap

target part, and is fixed while covering the wrap part with the butt seam part.

[0007] More specifically, the present invention is an end part joining structure of a wrapping paper wrapped along a circumferential direction of a wrap target part of a rod-shaped smoking article, in which: the wrapping paper has a pair of a first end part area and a second end part area that extend along an axial direction of the wrap target part, is formed into a cylindrical shape by joining the first end part area and the second end part area, and includes a butt seam part where inner faces of the first end part area and the second end part area are placed opposite to and on top of each other; and the butt seam part is folded back toward a wrap part adjacent to the butt seam part and wrapping the wrap target part, and is fixed while covering the wrap part.

[0008] According to the present invention, when joining the first end part area and the second end part area of the wrapping paper wrapped along the circumferential direction of the wrap target part, their inner faces are placed opposite to and on top of each other in the butt seam part. Hence, end-part joining strength of the wrapping paper can be made higher than the conventional structure in which an inner face of one end part area is placed on top of and bonded with an outer face of the other end part area.

[0009] In a filter of a rod-shaped smoking article, a liquid containing propylene glycol and glycerin, for example, may be added to the filter material. When a liquid is thus added to the filter material of the filter, a liquid impermeable layer may be formed on an inner face of a wrapping paper for filter that wraps the filter material of the filter of a rod-shaped smoking article, to keep the liquid from penetrating the wrapping paper for filter.

[0010] Accordingly, in the end part joining structure of a wrapping paper of the present invention, the wrapping paper may be a wrapping paper for filter that wraps a filter material of a filter of a rod-shaped smoking article, and a liquid impermeable layer may be formed on an inner face of the wrapping paper. In the end part joining structure of a wrapping paper for filter including a liquid impermeable layer on the inner face side thereof, a butt seam part where inner faces of the first end part area and the second end part area are placed opposite to and on top of each other are formed. Hence, even when a liquid is added to the filter material of the filter, end faces of the first end part area and the second end part area are less likely to come into contact with the liquid. Accordingly, it is possible to further suppress peeling of the joining part of the first end part area and the second end part area.

[0011] In the end part joining structure of a wrapping paper of the present invention, inner faces of the first end part area and the second end part area may be bonded in the butt seam part. This can improve the joining strength of the first end part area and the second end part area even more, so that peeling of the joining part of the first end part area and the second end part area

can be suppressed even more.

[0012] In the end part joining structure of a wrapping paper of the present invention, the butt seam part may have a non-wrap inner face area where positions of end faces of the first end part and the second end part are shifted while overlapping each other, so that a part of any one of the inner faces does not overlap the inner face of the other, the non-wrap inner face area may be folded back in such a manner as to face an outer face of the wrap part, and the non-wrap inner face area may be fixed to the outer face of the wrap part. Thus, it is possible to provide an end part joining structure of a wrapping paper having an extremely high productivity.

[0013] The present invention can also be specified as a filter of a rod-shaped smoking article. That is, the present invention is a filter of a rod-shaped smoking article including: a cylindrical filter material; and a wrapping paper for filter that is wrapped along a circumferential direction of the filter material, in which: the wrapping paper for filter has a pair of a first end part area and a second end part area that extend along an axial direction of the filter material, is formed into a cylindrical shape by joining the first end part area and the second end part area, and includes a butt seam part where inner faces of the first end part area and the second end part area are placed opposite to and on top of each other; and the butt seam part is folded back toward a wrap part adjacent to the butt seam part and wrapping the filter material, and is fixed while covering the wrap part.

In the filter of a rod-shaped smoking article of the present invention, a liquid impermeable layer may be formed on the inner face of the wrapping paper for filter. Also, a liquid may be added to the filter material.

[0014] Note that the means for solving the problems of the present invention may be combined in any possible way.

Advantageous Effects of Invention

[0015] The present invention provides a technique for suppressing, as compared to conventional techniques, peeling of a joining part of end part areas of a wrapping paper that wraps a wrap target part of a rod-shaped smoking article.

Brief Description of the Drawings

[0016]

[Fig.1] Fig. 1 is an external view of a cigarette of Embodiment 1.

[Fig.2] Fig. 2 is an exploded perspective view of the cigarette of Embodiment 1.

[Fig.3] Fig. 3 is a diagram illustrating a sheet-like wrapping paper before wrapping a filter section of Embodiment 1.

[Fig.4] Fig. 4 is a cross-sectional view of a filter section of Embodiment 1.

[Fig.5] Fig. 5 is a diagram for describing a conventional end part joining structure of a wrapping paper.

[Fig.6] Fig. 6 is a cross-sectional view of a filter section of Embodiment 2.

[Fig.7] Fig. 7 is a diagram illustrating a cigarette of a modification.

[Fig.8] Fig. 8 is a diagram for describing a filter section of a second modification.

10 Description of Embodiments

[0017] Hereinafter, embodiments of an end part joining structure of a wrapping paper of a smoking article of the present invention will be described with reference to the drawings. The dimension, material, shape, and relative arrangements, for example, of components described in the embodiments are not intended to limit the technical scope of the invention, unless particularly stated.

20 <Embodiment 1>

[0018] Fig. 1 is an external view of a cigarette 1 of Embodiment 1. Fig. 2 is an exploded perspective view of the cigarette 1 of Embodiment 1. The cigarette 1 is a filtered cigarette including a tobacco rod 2 and a filter 4 connected to one end of the tobacco rod 2 through a tipping paper 3. The cigarette 1 is an example of a rod-shaped smoking article of the present invention.

[0019] The tobacco rod 2 is tobacco 21 wrapped to be formed into a columnar shape (rod shape) with a cigarette paper (wrapping paper) 22. The filter 4 is a part that filters a smoke component contained in mainstream smoke, when the filter 4 allows passage of the mainstream smoke generated from smoking of the cigarette 1. The filter 4 is formed into a columnar shape having substantially the same diameter as the tobacco rod 2.

[0020] The filter 4 is wrapped in the tipping paper 3, and is connected to the rear end of the tobacco rod 2 through the tipping paper 3. The tipping paper 3 wraps an end part of the tobacco rod 2 integrally with the filter 4, and thereby connects the parts together. An air hole 31 for introducing outside air (air) for diluting mainstream smoke into the filter 4 is pierced, in an area of the tipping paper 3 that covers the filter 4. The air hole 31 is a so-called outside air introduction hole for ventilation, and multiple air holes 31 are formed in the tipping paper 3. Air introduced through the air holes 31 in the tipping paper 3 dilutes mainstream smoke that passes through the filter 4. Note that the air holes 31 in the tipping paper 3 are not an essential configuration, and the installation form of the air holes 31 may be varied according to need. Hereinbelow, in the longitudinal direction (axial direction) of the tobacco rod 2, an end part that is connected to the filter 4 is referred to as "rear end," and an end part opposite thereto is referred to as "front end" (tip end). In the longitudinal direction (axial direction) of the filter 4, an end part connected to the tobacco rod 2 is referred to as "front end," and an end part opposite to the front end is

referred to as "mouthpiece end." A section of the cigarette 1 (tobacco rod 2, filter 4) along the longitudinal direction (axial direction) is defined as "longitudinal section," and a section in a direction perpendicular thereto is defined as "cross section."

[0021] The filter 4 has a filter section 7 formed by wrapping a filter material 5 such as a cellulose acetate tow with a wrapping paper 6. A liquid solution is added to the filter material 5 of the filter section 7 of the embodiment. The liquid solution contains propylene glycol (PG) and glycerin (G), for example. Since propylene glycol is contained in the liquid solution added to the filter section 7, it is possible to selectively eliminate, when smoking, a predetermined component such as phenol contained in smoke generated from smoking, while not eliminating limonene which is an aroma component and allowing it to penetrate the filter 4. Additionally, since glycerin is contained in the liquid solution added to the filter section 7, it is possible to keep the propylene glycol in the solution from volatilizing and disappearing during storage of the cigarette 1. Note that commercial propylene glycol and glycerin may be used.

[0022] A thickener may be contained in the liquid solution added to the filter section 7. The type of thickener to be used is not particularly limited as long as it is dissolvable in propylene glycol or glycerin, and examples of the thickener include: xanthan gum, gellam gum, psyllium seed gum, pectin, carboxymethylcellulose, hydroxypropylcellulose, polyvinyl alcohol, agarose, pullulan, alginic acid, polyacrylic acid, and alkali metal salts or alkaline-earth metal salts thereof.

[0023] Fig. 3 is a diagram illustrating the sheet-like wrapping paper 6 before wrapping the filter section 7 of Embodiment 1. In the wrapping paper 6, a liquid impermeable layer 62 is formed on one face of a base material 61. Note that the wrapping paper 6 wraps the filter section 7, so that the liquid impermeable layer 62 is an inner face that faces an outer circumferential face of the filter material 5. A known paper normally used as a wrapping paper for filter may be used as the base material 61 of the wrapping paper 6.

[0024] A resin material is preferably used as the material forming the liquid impermeable layer 62. Examples of the material forming the liquid impermeable layer 62 include polyethylene, polypropylene, polystyrene, cellulose, acetyl cellulose, polytetrafluoroethylene, polyoxydimethylsilylene, polyvinyl acetate, polyvinyl chloride, polymethyl acrylate, polymethyl methacrylate, natural rubber, polybutadiene, and one or more selected from their copolymer, aluminum, alumina and silica. Among these materials, polyethylene and polypropylene are particularly preferably used as the material forming the liquid impermeable layer 62. The liquid impermeable layer 62 of the wrapping paper 6 may be laminated on the surface of the base material 61 by means such as coating and deposition. In the embodiment, the liquid impermeable layer 62 is formed by coating polyethylene on the base material 61 of the wrapping paper 6.

[0025] Fig. 4 is a cross-sectional view of the filter section 7 of Embodiment 1. In the filter section 7, the wrapping paper 6 is wrapped along the circumferential direction of the columnar filter material 5. More specifically, the wrapping paper 6 wraps the filter material 5 with the liquid impermeable layer 62 facing inward, so that the liquid impermeable layer 62 faces the outer circumferential face of the filter material 5. The wrapping paper 6 includes a pair of a first end part area 63 and a second end part area 64 (see Fig. 4) that extend along the axial direction of the filter section 7 (filter 4, cigarette 1). The wrapping paper 6 is formed into a cylindrical shape by placing the first end part area 63 and the second end part area 64 on top of one another, and joining the overlapping areas. In the embodiment, the filter section 7 corresponds to a wrap target part of the present invention.

[0026] As illustrated in Fig. 4, the wrapping paper 6 of the filter section 7 includes a butt seam part 65, where inner faces of the first end part area 63 and the second end part area 64 are placed opposite to and on top of each other. Reference numeral 66 in Fig. 4 indicates an adjacent wrapping part that is adjacent to the butt seam part 65 of the wrapping paper 6 and wraps the filter section 7.

[0027] In the butt seam part 65 of the wrapping paper 6, the inner faces of the first end part area 63 and the second end part area 64, that is, the liquid impermeable layer 62 on the first end part area 63 and the liquid impermeable layer 62 on the second end part area 64 are bonded to each other. Although a liquid resistant bonding agent may be used to bond the liquid impermeable layer 62 of the first end part area 63 and the liquid impermeable layer 62 of the second end part area 64, in the embodiment, the liquid impermeable layer 62 on the first end part area 63 and the liquid impermeable layer 62 on the second end part area 64 of the butt seam part are integrally bonded by heat sealing. More specifically, at least a part of a joining area, where the inner face of the liquid impermeable layer 62 of the first end part area 63 and the inner face of the liquid impermeable layer 62 of the second end part area 64 are placed on top of each other, is fused with no bonding agent interposed therebetween. Instead, the entire (entire area) joining area, where the inner face of the liquid impermeable layer 62 of the first end part area 63 and the inner face of the liquid impermeable layer 62 of the second end part area 64 are placed on top of each other, may be fused with no bonding agent interposed therebetween. Note that since the liquid impermeable layer 62 of the embodiment is formed of polyethylene having a relatively low fusing point, there is an advantage that the liquid impermeable layer 62 can be handled easily when performing heat sealing. In addition, since the joining area, where the inner face of the liquid impermeable layer 62 of the first end part area 63 and the inner face of the liquid impermeable layer 62 of the second end part area 64 are placed on top of each other, is heat sealed with no adhesive interposed therebetween, there is also an advantage that the thickness of

the joining area can be reduced by the unused adhesive.

[0028] As illustrated in Fig. 4, the butt seam part 65 of the wrapping paper 6 is folded back such that an outer face of the first end part area 63 faces an outer face of the adjacent wrapping part 66. The butt seam part 65 is bonded to the adjacent wrapping part 66 through an adhesive 9, while covering the outer face of the adjacent wrapping part 66.

[0029] Meanwhile, Fig. 5 is a diagram for describing a conventional end part joining structure of a wrapping paper 6. In the conventional example illustrated in Fig. 5, the wrapping paper 6 is bonded with an adhesive 9, while end parts thereof are placed on top of each other such that an inner face of a second end part area 64 faces an outer face of a first end part area 63. According to this configuration, a liquid solution 10 added to a filter section 7 comes into contact with a base material 61 at an end face 63a of the first end part area 63. Hence, the liquid solution 10 is likely to soak into the base material 61 from the end face 63a. As a result, the liquid solution 10 soaked into the base material 61 of the first end part area 63 may reduce the bonding force of the adhesive 9, and cause the first end part area 63 and the second end part area 64 to easily peel off. Accordingly, the wrapping paper may peel off during production or conveyance of the filter section, and be unable to maintain an appropriate shape, for example. Also, if application of an external force deforms the filter during storage of the cigarette, the liquid solution 10 may leak from the filter section 7. Then, the liquid solution 10 leaked from the filter section 7 may penetrate the tipping paper and ooze to an outer face of the tipping paper, and thereby degrade the appearance of the cigarette.

[0030] On the other hand, according to the end part joining structure of the wrapping paper 6 of the embodiment illustrated in Fig. 4, the inner faces of the first end part area 63 and the second end part area 64, that is, both liquid impermeable layers 62 are placed on top of each other to form the butt seam part 65. Hence, the base material 61 of the wrapping paper 6 does not come into contact with the liquid solution 10 added to the filter section 7. This can keep the liquid solution 10 added to the filter section 7 from soaking into the base material 61 of the wrapping paper 6. Consequently, a failure such as peeling of the bond between the first end part area 63 and the second end part area 64 in the conventional technique is less likely to occur. It is also possible to keep the liquid solution 10 added to the filter section 7 from leaking to the outside. As a result, excellent appearance of the cigarette 1 can be maintained. Moreover, the butt seam part 65 of the wrapping paper 6 is folded back along the outer surface of the adjacent wrapping part 66, and is bonded with the adhesive 9. This can suppress deformation of the filter section 7, and a satisfactory circle can be maintained.

[0031] Note that the thickness of the liquid impermeable layer 62 of the wrapping paper 6 is not particularly limited in the embodiment, and may be set appropriately

according to the combination of the property of the base material 61 and the material constituting the liquid impermeable layer 62, for example. In an exemplar form, the thickness of the liquid impermeable layer 62 may be set to 5 to 30 μm . When coating one side of the base material 61 of the wrapping paper 6 with polyethylene to form the liquid impermeable layer 62, it is preferable that the basis weight, thickness, air permeability and the like of the base material 61 be selected appropriately to keep the coating liquid from penetrating the base material 61.

[0032] Although the type of the adhesive 9 for bonding the butt seam part 65 of the wrapping paper 6 to the adjacent wrapping part 66 is not particularly limited, a relatively water resistant hot melt glue may be appropriately used, for example. As an appropriate hot melt glue, an ethylene vinylacetate copolymer (EVA) based hot melt may be appropriately used, for example.

[0033] The wrapping paper 6 of the embodiment has the liquid impermeable layer 62 only on the inner face that faces the filter material 5 of the filter section 7, and does not have the liquid impermeable layer 62 on the outer face side. In other words, the outer face of the butt seam part 65 where the adhesive 9 is applied and the outer face of the adjacent wrapping part 66 are both formed as an exposed face of the base material 61. Hence, it is possible to suppress reduction in the bonding force of the adhesive 9. Additionally, the length of the fold back when folding back the first end part area 63 in the butt seam part 65 of the wrapping paper 6 is not particularly limited. In an exemplar form, this length may be set to about several millimeters (e.g., 2 mm), whereby productivity can be improved.

<Embodiment 2>

[0034] Fig. 6 is a cross-sectional view of a filter section 7A of Embodiment 2. A cigarette of the embodiment differs from Embodiment 1 only in the end structure of a wrapping paper 6A of the filter section 7A. Hereinafter, the point different from Embodiment 1 will mainly be described.

[0035] Also in this embodiment, a liquid solution 10 is added to a filter material 5 of the filter section 7A, and the wrapping paper 6A wraps the filter material 5. As illustrated in Fig. 6, as in the case of Embodiment 1, the wrapping paper 6A has a butt seam part 65A where inner faces of a first end part area 63 and a second end part area 64 are placed on top of each other. In the butt seam part 65A of Embodiment 2, end faces 63a and 64a overlap each other in a shifted manner, in such a manner as to form a non-wrap inner face area, where a part of the inner face of the first end part area 63 or the second end part area 64 does not overlap the other inner face. In the example illustrated in Fig. 6, of the first end part area 63 and the second end part area 64 constituting the butt seam part 65A, the second end part area 64 has a longer peripheral length than the first end part area 63. Then, the inner faces of the first end part area 63 and the second

end part area 64, that is, both liquid impermeable layers 62 are heat sealed, with an end face 63a of the first end part area 63 and an end face 64a of the second end part area 64 shifted to form a non-wrap inner face area 641 in a part of the inner face of the second end part area 64. In other words, the inner faces of the first end part area 63 and the second end part area 64 are bonded such that the non-wrap inner face area 641 is formed in a part of the second end part area 64.

[0036] Then, as illustrated in Fig. 6, the butt seam part 65A of the wrapping paper 6A is folded back such that the non-wrap inner face area 641 of the second end part area 64 faces an outer face of an adjacent wrapping part 66 of the wrapping paper 6A. The non-wrap inner face area 641 is fixed to the outer face of the adjacent wrapping part 66 with an adhesive 9. Note that when applying the adhesive 9 onto the non-wrap inner face area 641, the adhesive 9 may be applied on a part of the non-wrap inner face area 641, or may be applied on the entire face. Also in the end part joining structure of the wrapping paper 6A of the embodiment, the liquid impermeable layers 62 of the first end part area 63 and the second end part area 64 forming the butt seam part 65A are heat sealed. Hence, it is possible to keep a base material 61 of the wrapping paper 6A from coming into contact with the liquid solution 10 added to the filter section 7A. This can keep the liquid solution 10 added to the filter section 7A from soaking into the base material 61 of the wrapping paper 6A. Consequently, a failure such as peeling of the bond between the first end part area 63 and the second end part area 64 in the conventional technique is less likely to occur. As a result, the liquid solution 10 added to the filter section 7A can be kept from leaking to the outside.

[0037] According to the end part joining structure of the wrapping paper 6A of the embodiment, the butt seam part 65A is formed with the end face 63a of the first end part area 63 and the end face 64a of the second end part area 64 shifted in the circumferential direction. Hence, the butt seam part 65A can be bonded to the adjacent wrapping part 66, by applying the adhesive 9 onto the non-wrap inner face area 641 of the second end part area 64, instead of an outer face 631 of the first end part area 63. With this configuration, in a production process of the filter section 7A, first, the first end part area 63 is formed by folding back an end part of the long wrapping paper 6A wound around a bobbin or the like, and then the adhesive 9 is applied onto a part wound around the outer periphery of the columnar filter material 5 and corresponding to the non-wrap inner face area 641 on the second end part area 64. Thereafter, the non-wrap inner face area 641 on which the adhesive 9 is applied can be pushed against the outer face of the adjacent wrapping part 66 to bond these parts. Hence, an extremely high productivity can be achieved.

[0038] Both liquid impermeable layers 62 of the first end part area 63 and the second end part area 64 are heat sealed in the butt seam part 65A of the wrapping

paper 6A. Note, however, that if it is conceivable that the liquid solution 10 added to the filter section 7A is not likely to reach the end face 63a of the first end part area 63 by ensuring a sufficient length of overlap between the first end part area 63 and the second end part area 64, for example, the heat seal between both liquid impermeable layers 62 of the first end part area 63 and the second end part area 64 may be omitted.

[0039] Note that various modifications and improvements can be made in the above embodiments. Fig. 7 is a diagram illustrating a cigarette 1A of a modification. A filter 4A of the cigarette 1A is a so-called triple section filter, and a front filter section 11 and a rear filter section 12 are connected to the front and rear of a filter section 7. In other words, in the filter 4A, the filter section 7 is sandwiched between the front filter section 11 and the rear filter section 12.

[0040] The front filter section 11 and the rear filter section 12 are formed of a cellulose acetate tow wrapped in a normal wrapping paper, for example. No liquid solution 10 is added to the front filter section 11 or the rear filter section 12, and the liquid solution 10 is added only to the middle filter section 7. The front filter section 11, the filter section 7, and the rear filter section 12 are integrally fixed by being wrapped with a forming paper 13, which is an example of a wrapping paper for filter. Note that details of the configuration of the filter section 7 are as described in Embodiment 1.

[0041] In the filter 4A of the modification, the front filter section 11 to which no liquid solution 10 is applied is placed at the front of the filter section 7 to which the liquid solution 10 is applied. Hence, it is possible to keep the liquid solution 10 from moving the tobacco rod 2 side. Also, since the rear filter section 12 to which no liquid solution 10 is applied is placed at the rear of the filter section 7, it is also possible to keep the liquid solution 10 from being introduced into the smoker's oral cavity from the mouthpiece end. Note that in the modification illustrated in Fig. 7, the filter section 7 may be replaced with the filter section 7A described in Embodiment 2, as a matter of course.

[0042] Although the embodiments described above are cases of applying the end part joining structure of a wrapping (rolling) paper of the present invention to a wrapping paper for filter wrapped around the filter section 7 to which a liquid solution is added, the invention is not limited to this. For example, by applying the end part joining structure of the present invention to a wrapping (rolling) paper of filter that does not have a liquid impermeable layer formed therein, the joining (bonding) strength of the end parts can be made stronger than conventional techniques.

[0043] Fig. 8 is a diagram for describing a filter section 7B of a second modification. The filter section 7B has a filter material 5 and a wrapping paper 6B that wraps an outer circumferential face of the filter material 5. The wrapping paper 6B does not have a liquid impermeable layer on the surface of a base material 61. Additionally,

in the modification, a liquid solution containing propylene glycol and glycerin is not added to the filter material 5 of the filter section 7B. Other parts of the wrapping paper 6B of the modification are the same as the wrapping paper 6 of Embodiment 1.

[0044] The wrapping paper 6B includes a butt seam part 65B where inner faces of a first end part area 63 and a second end part area 64 are placed opposite to and bonded with each other. The butt seam part 65B is folded back to an adjacent wrapping part 66 side, and is bonded to the adjacent wrapping part 66 with an adhesive 9, while covering an outer face of the adjacent wrapping part 66. According to the end part joining structure of the wrapping paper 6B, since the inner faces of the wrapping paper 6B are placed opposite to and on top of each other in the butt seam part 65B, the end-part joining strength of the wrapping paper 6B can be made higher than the conventional structure in which the inner face of the second end part area 64 is placed on top of and bonded to the outer face of the first end part area 63. Particularly, in the modification, the inner faces of the first end part area 63 and the second end part area 64 of the butt seam part 65B are bonded. Hence, the end-part joining strength of the wrapping paper 6B becomes even higher. As a result, it is possible to suppress peeling of the joining part of the end part areas of the wrapping paper 6B.

[0045] Note that in the modification, the end part joining structure of the wrapping paper 6A described in Embodiment 2 may be applied instead of the wrapping paper 6B. Moreover, although the modification describes a case of applying the end part joining structure of a wrapping paper (rolling) of the present invention to a wrapping paper for filter, the structure may be applied to the cigarette paper 22 that wraps the tobacco 21 of the tobacco rod 2, for example. That is, the end part joining structure of the cigarette paper 22 of the tobacco rod 2 may be formed to include the butt seam part 65B illustrated in Fig. 8. This makes the end-part joining strength of the cigarette paper 22 higher than conventional techniques, and can suppress peeling of the joining part of end part areas of the cigarette paper 22.

Reference Signs List

[0046]

- 1 cigarette
- 2 tobacco rod
- 3 tipping paper
- 4 filter
- 5 filter material
- 6 wrapping paper
- 7 filter section
- 9 adhesive
- 10 liquid solution
- 61 base material
- 62 liquid impermeable layer
- 63 first end part area

- 64 second end part area
- 65 butt seam part
- 66 adjacent wrapping part

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Claims

1. An end part joining structure of a wrapping paper wrapped along a circumferential direction of a wrap target part of a rod-shaped smoking article, wherein:

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the wrapping paper

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has a pair of a first end part area and a second end part area that extend along an axial direction of the wrap target part, is formed into a cylindrical shape by joining the first end part area and the second end part area, and includes a butt seam part where inner faces of the first end part area and the second end part area are placed opposite to and on top of each other; and

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the butt seam part is folded back toward a wrap part adjacent to the butt seam part and wrapping the wrap target part, and is fixed while covering the wrap part.

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2. The end part joining structure of a cigarette paper of a rod-shaped smoking article according to claim 1, wherein:

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the wrapping paper is a wrapping paper for filter that wraps a filter material of a filter of a rod-shaped smoking article; and a liquid impermeable layer is formed on the inner face of the wrapping paper.

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3. The end part joining structure of a cigarette paper of a rod-shaped smoking article according to claim 1 or 2, wherein inner faces of the first end part area and the second end part area are bonded in the butt seam part.

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4. The end part joining structure of a cigarette paper of a rod-shaped smoking article according to any one of claims 1 to 3, wherein:

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the butt seam part has a non-wrap inner face area where positions of end faces of the first end part and the second end part are shifted while overlapping each other, so that a part of any one of the inner faces does not overlap the inner face of the other; the non-wrap inner face area is folded back in such a manner as to face an outer face of the wrap part; and

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the non-wrap inner face area is fixed to the outer face of the wrap part.

5. A filter of a rod-shaped smoking article comprising:

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a cylindrical filter material; and
a wrapping paper for filter that is wrapped along a circumferential direction of the filter material, wherein:

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the wrapping paper for filter

has a pair of a first end part area and a second end part area that extend along an axial direction of the filter material, is formed into a cylindrical shape by joining the first end part area and the second end part area, and includes a butt seam part where inner faces of the first end part area and the second end part area are placed opposite to and on top of each other; and

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the butt seam part is folded back toward a wrap part adjacent to the butt seam part and wrapping the filter material, and is fixed while covering the wrap part.

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6. The filter of a rod-shaped smoking article according to claim 5, wherein
a liquid impermeable layer is formed on the inner face of the wrapping paper for filter.

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7. The filter of a rod-shaped smoking article according to claim 6, wherein
a liquid is added to the filter material.

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FIG. 1

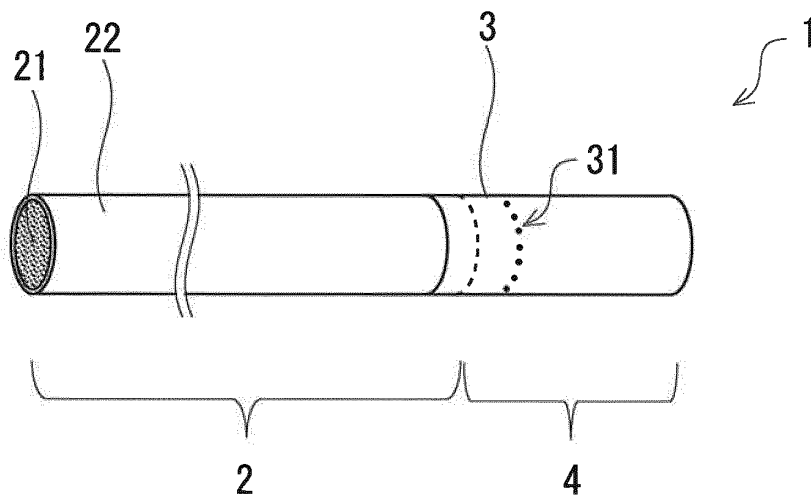


FIG. 2

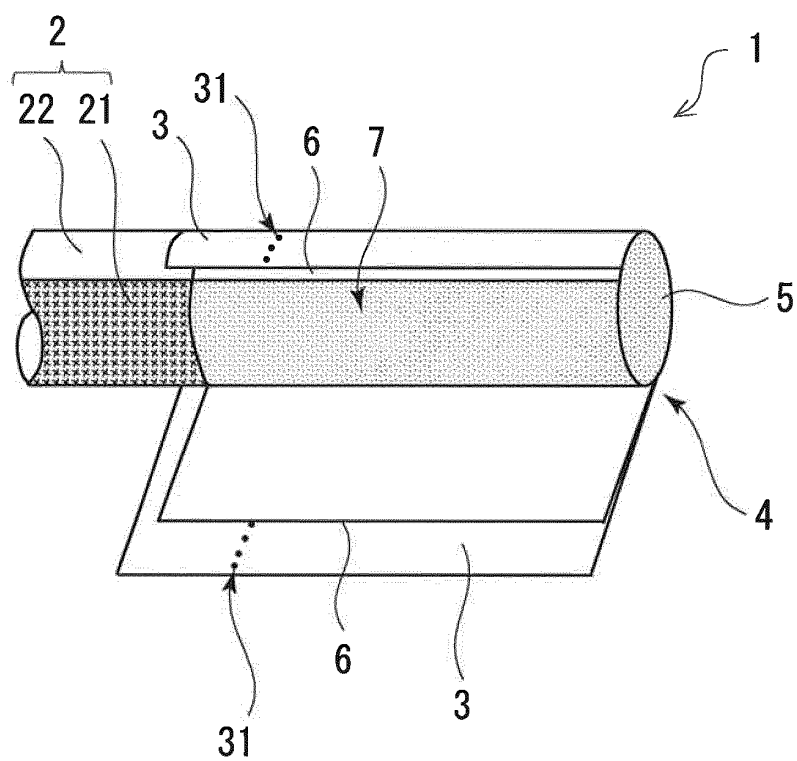


FIG. 3

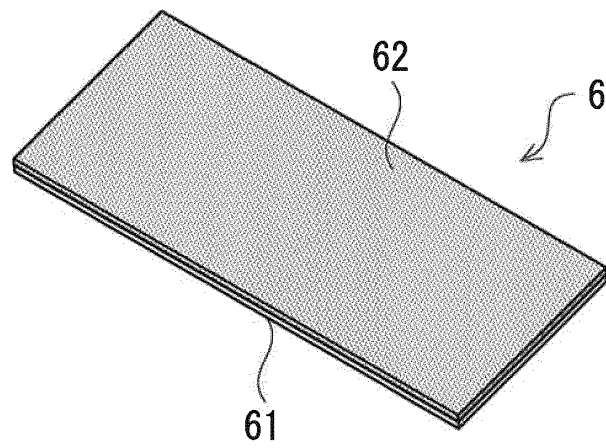


FIG. 4

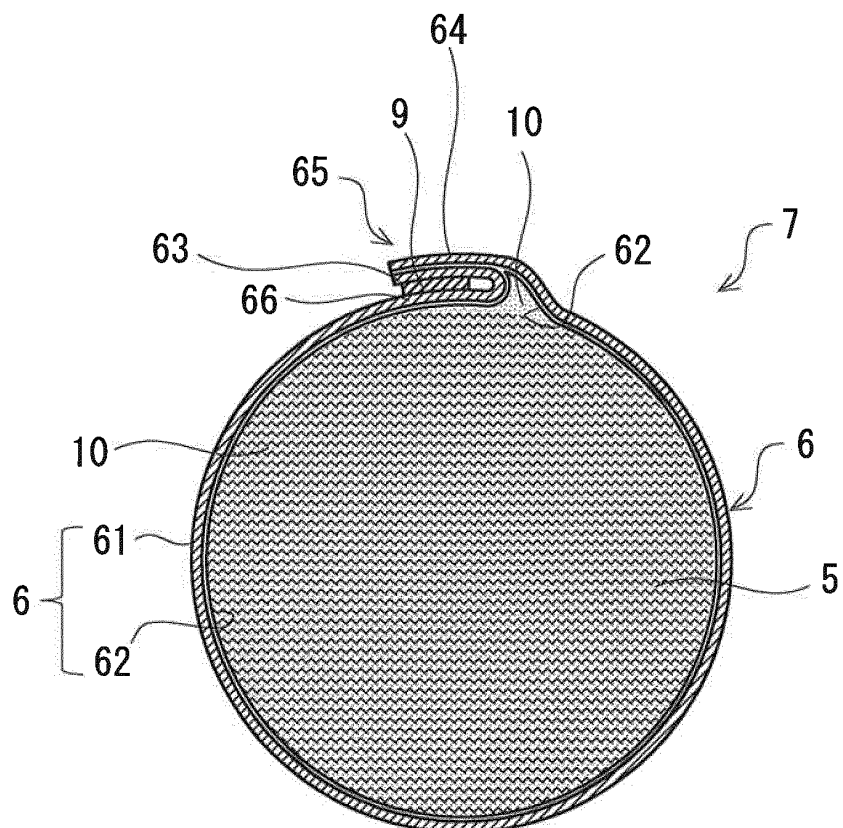


FIG. 5

CONVENTIONAL

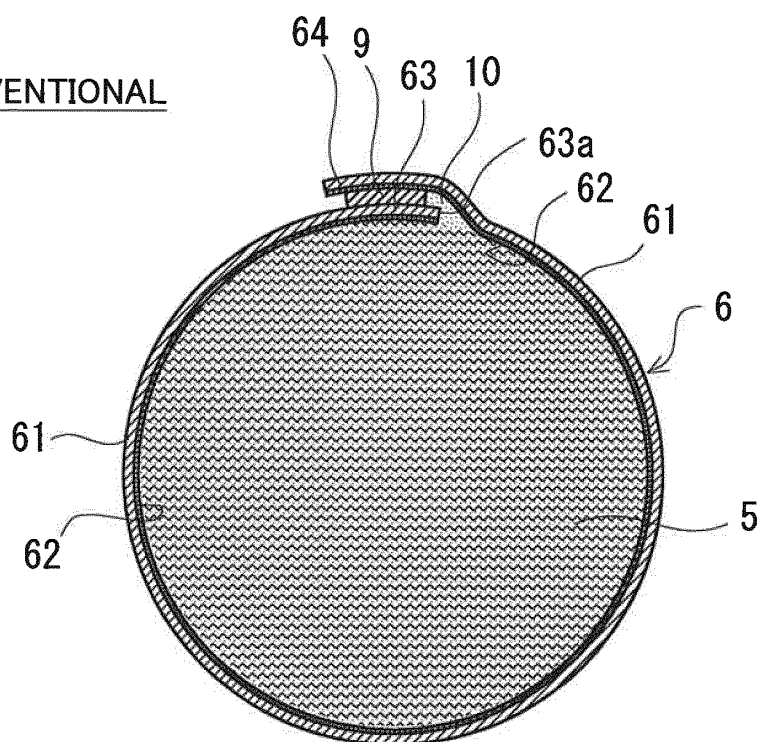


FIG. 6

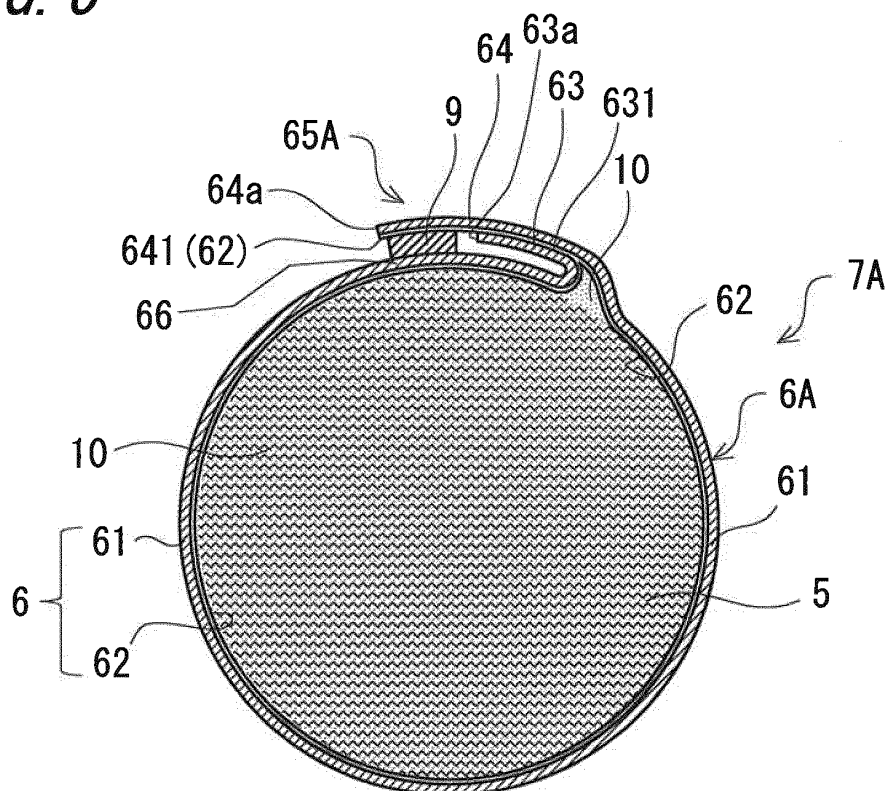


FIG. 7

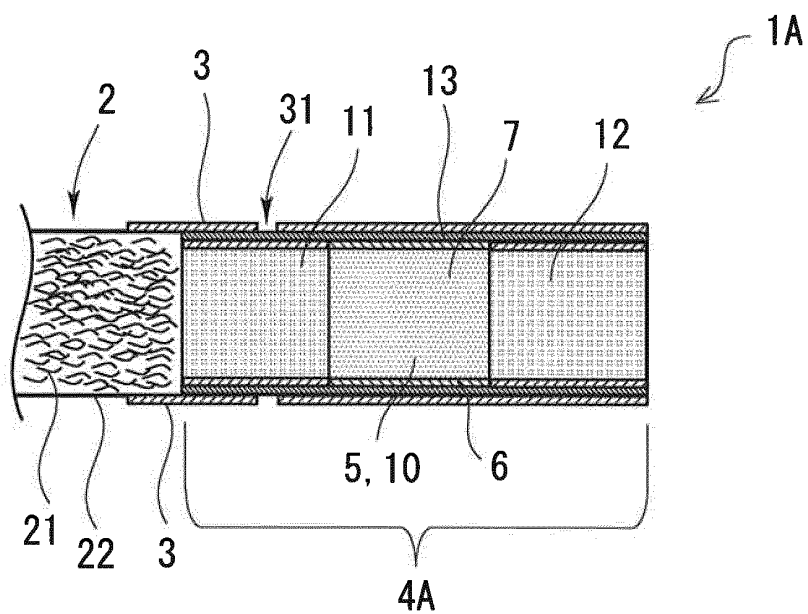
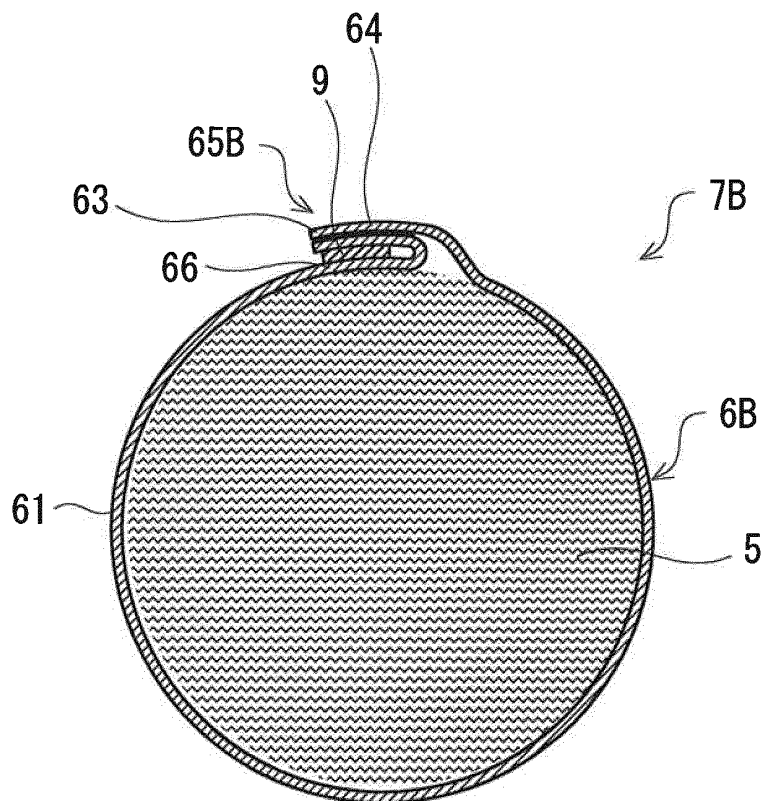


FIG. 8



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/065472

A. CLASSIFICATION OF SUBJECT MATTER

A24D3/04 (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)

A24D3/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2016

Kokai Jitsuyo Shinan Koho 1971-2016 Toroku Jitsuyo Shinan Koho 1994-2016

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2008-539717 A (Philip Morris Products S.A.), 20 November 2008 (20.11.2008), entire text; all drawings & JP 4960956 B2 & US 2007/0012327 A1 & WO 2006/117697 A1 & CN 101193564 A	1-7
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 8319/1978 (Laid-open No. 112900/1979) (Minoru HATAKEYAMA), 08 August 1979 (08.08.1979), entire text; all drawings (Family: none)	1-7

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

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"&" document member of the same patent family

Date of the actual completion of the international search
04 August 2016 (04.08.16)Date of mailing of the international search report
16 August 2016 (16.08.16)Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/065472

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1459983 A1 (TOPACK VERPACKUNGSTECHNIK GMBH), 22 September 2004 (22.09.2004), entire text; all drawings (Family: none)	1-7

Form PCT/ISA/210 (continuation of second sheet) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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