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(54) **MULTI-PLY PRODUCTS COMPRISING A CONSUMER ACCESSIBLE TAB**

MEHRLAGIGE PRODUKTE MIT FÜR EINEN VERBRAUCHER ZUGÄNGLICHER LASCHE
PRODUITS MULTICOUCHES COMPRENANT UNE LANGUETTE ACCESSIBLE POUR
L'UTILISATEUR

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• **PATENT ABSTRACTS OF JAPAN** vol. 1997, no.
09, 30 September 1997 (1997-09-30) & JP 9 122038
A (SOUMA AKIHITO), 13 May 1997 (1997-05-13)

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Description

Field of the Invention

[0001] The present invention relates to rolled multi-ply products, more particularly rolled multi-ply sanitary tissue products comprising a consumer accessible tab and methods for making same.

Background of the Invention

[0002] Multi-ply products, especially rolled multi-ply products, more particularly rolled multi-ply sanitary tissue products, such as toilet tissue, have conventionally been problematic for consumers to locate the starting end of the multi-ply product and/or dispense the multi-ply product during use without damaging the multi-ply product. The problem of damaging the multi-ply product, especially a rolled multi-ply product is especially evident in conventional rolled multi-ply toilet tissue products. For example, a consumer may attempt to start dispensing a rolled two-ply toilet tissue product by inadvertently grabbing only the exterior ply of the two-ply toilet tissue product and thus causing the two plies to become separated. The end result is that the consumer dispenses only one ply of the two ply product which creates alignment issues with the sheets of the product. This problem associated with multi-ply products, especially rolled multi-ply sanitary tissue products is called "skinning the roll."

[0003] Accordingly, there is a need for a multi-ply product, especially a multi-ply sanitary tissue product, more particularly a rolled multi-ply sanitary tissue product that prevents and/or mitigates the risk of a consumer skinning-the multi-ply product by dispensing less than the total number of plies of the multi-ply product.

Summary of the Invention

[0004] The present invention fulfills the need described above by providing a multi-ply product with a consumer accessible tab.

[0005] A rolled multi-ply product comprising a multi-ply bonded fibrous structure having a core end and a tail end, wherein the multi-ply fibrous structure is freely, convolutely wound from the core end out to the tail end, wherein the tail of the multi-ply fibrous structure is tail sealed to the multi-ply fibrous structure by a tail seal glue and comprises a consumer accessible tab. The consumer accessible tab comprises at least two plies of the multi-ply fibrous structure bonded together via an adhesive in the cross machine direction. The consumer accessible tab extends from the tail end toward the core end along the multi-ply fibrous structure, in the machine direction, for a distance from 2 cm to 15 cm and is more proximal to the tail end of the multi-ply fibrous structure than is the tail seal glue.

US 5 143 776 discloses a dual laminae tissue having the laminae adhesively joined to minimize skinning. In JP 09

122 038, a plurality of sheets of paper are laminated and adhesion parts are formed at specified intervals, CH 689 482 discloses a grip lug for an easy opening of the roll. US 3524539 discloses a two-ply fibrous rolled product wherein the two plies of the core end and of the tail are physically attached to each other by embossing providing an embossed core and tail portion. The tail end is adhered to the roll by areas of adhesive upon or beneath the tail end.

[0006] In another aspect of the present invention, a method for making a rolled multi-ply product comprising a multi-ply fibrous structure, wherein the multi-ply product comprises a consumer accessible tab, is provided.

Brief Description of the Drawings

[0007]

Fig. 1A is a schematic top planar view of one embodiment of a multi-ply product in accordance with the present invention;

Fig. 1B is a schematic side, cross-sectional view along line 1B-1B of the multi-ply product of Fig. 1A; Fig. 1C is a schematic view of the multi-ply product of Fig. 1B in roll form;

Fig. 2A is a schematic top planar view of another embodiment of a multi-ply product in accordance with the present invention;

Fig. 2B is a schematic side, cross-sectional view along line 2B-2B of the multi-ply product of Fig. 2A; Fig. 2C is a schematic view of the multi-ply product of Fig. 2B in roll form;

Fig. 3 is a schematic representation of a method for making a multi-ply product in accordance with the present invention;

Fig. 4 is a partial schematic representation of a method for making a rolled, multi-ply product in accordance with the present invention.

Detailed Description of the Invention

Definitions

[0008] "Fiber" as used herein means an elongate particulate having an apparent length greatly exceeding its apparent width, i.e. a length to diameter ratio of at least about 10. More specifically, as used herein, "fiber" refers to papermaking fibers. The present invention contemplates the use of a variety of papermaking fibers, such as, for example, natural fibers or synthetic fibers, or any other suitable fibers, and any combination thereof. Papermaking fibers useful in the present invention include cellulosic fibers commonly known as wood pulp fibers. Applicable wood pulps include chemical pulps, such as Kraft, sulfite, and sulfate pulps, as well as mechanical pulps including, for example, groundwood, thermomechanical pulp and chemically modified thermomechanical pulp. Chemical pulps, however, may be preferred

since they impart a superior tactile sense of softness to tissue sheets made therefrom. Pulps derived from both deciduous trees (hereinafter, also referred to as "hardwood") and coniferous trees (hereinafter, also referred to as "softwood") may be utilized. The hardwood and softwood fibers can be blended, or alternatively, can be deposited in layers to provide a stratified web. U.S. Pat. No. 4,300,981 and U.S. Pat. No. 3,994,771 disclose layering of hardwood and softwood fibers. Also applicable to the present invention are fibers derived from recycled paper, which may contain any or all of the above categories as well as other non-fibrous materials such as fillers and adhesives used to facilitate the original papermaking. In addition to the above, fibers and/or filaments made from polymers, specifically hydroxyl polymers may be used in the present invention. Nonlimiting examples of suitable hydroxyl polymers include polyvinyl alcohol, starch, starch derivatives, chitosan, chitosan derivatives, cellulose derivatives, gums, arabinans, galactans and mixtures thereof.

[0009] "Consumer accessible tab" as used herein means a part of the multi-ply fibrous structure near the tail end of the fibrous structure that is accessible to a consumer using a never-before-used (i.e., brand new) multi-ply product.

[0010] "Convolutely wound" as used herein means that a material is rolled with one part over another in a non-bound manner. In other words, no adhesive binds one overlapping part to the other in the roll.

[0011] "Sanitary tissue product" as used herein means a fiber-containing web useful as a wiping implement for post-urinary and post-bowel movement cleaning (toilet tissue), for otorhinolaryngological discharges (facial tissue), and multi-functional absorbent and cleaning uses (absorbent towels).

[0012] "Weight average molecular weight" as used herein means the weight average molecular weight as determined using gel permeation chromatography according to the protocol found in Colloids and Surfaces A. Physico Chemical & Engineering Aspects, Vol. 162, 2000, pg. 107-121.

[0013] "Machine Direction" or "MD" as used herein means the direction parallel to the flow of the fibrous structure through the papermaking machine and/or product manufacturing equipment.

[0014] "Cross Machine Direction" or "CD" as used herein means the direction perpendicular to the machine direction in the same plane of the fibrous structure and/or paper product comprising the fibrous structure.

[0015] "Ply" or "Plies" as used herein means an individual fibrous structure optionally to be disposed in a substantially contiguous, face-to-face relationship with other plies; forming a multi-ply fibrous structure. It is also contemplated that a single fibrous structure can effectively form two "plies" or multiple "plies", for example, by being folded on itself.

[0016] "Basis Weight" as used herein is the weight per unit area of a sample reported in lbs/3000 ft² or g/m².

[0017] Basis weight is measured by preparing one or more samples of a certain area (m²) and weighing the sample(s) of a fibrous structure according to the present invention and/or a paper product comprising such fibrous structure on a top loading balance with a minimum resolution of 0.01 g. The balance is protected from air drafts and other disturbances using a draft shield. Weights are recorded when the readings on the balance become constant. The average weight (g) is calculated and the average area of the samples (m²). The basis weight (g/m²) is calculated by dividing the average weight (g) by the average area of the samples (m²).

Fibrous Structure

[0018] The fibrous structure may be foreshortened, such as via creping, or non-foreshortened, such as not creping.

[0019] The fibrous structures of the present invention are useful in paper, especially sanitary tissue paper products including, but not limited to: conventionally felt-pressed tissue paper; through-air dried tissue paper; pattern densified tissue paper; and high-bulk, uncompacted tissue paper. The tissue paper may be of a homogenous or multilayered construction; and tissue paper products in accordance with the present invention are of a multi-ply construction. The tissue paper preferably has a basis weight of between about 10 g/m² and about 120 g/m², and density of about 0.60 g/cc or less. Preferably, the basis weight will be below about 35 g/m²; and the density will be about 0.30 g/cc or less. Most preferably, the density will be between about 0.04 g/cc and about 0.20 g/cc as measured by the Basis Weight Method described herein.

[0020] The fibrous structure may be made with a fibrous furnish that produces a single layer embryonic fibrous web or a fibrous furnish that produces a multi-layer embryonic fibrous web.

Multi-ply Product

[0021] The multi-ply product of the present comprises a multi-ply (i.e., two or more plies) fibrous structure. The multi-ply product is in roll form, thus producing a rolled multi-ply product.

[0022] In one embodiment of the present invention, as shown in Figs. 1A-C, the multi-ply product **10'** of the present invention comprises a multi-ply fibrous structure **10** having a first ply **20** and a second ply **22**. The multiplies of the fibrous structure **10** are ply bonded together in a face-to-face manner by any suitable means known to those of ordinary skill in the art, such as by mechanical, chemical and/or electrostatic forces. Typically, a ply bond adhesive is used to bond the multi-plies together. The ply bond adhesive is typically applied to at least a surface of at least one ply which will be in contact with one or more surfaces of other plies. Further, typically the ply bond adhesive is applied in the machine direction.

[0023] The multi-ply fibrous structure **10** comprises a core end **12** and a tail **14** comprising a tail end **16**.

[0024] As shown in Fig. 1C, the multi-ply fibrous structure **10** is in the form of a rolled multi-ply product **10'**. In order to produce the rolled multi-ply product **10'**, the multi-ply fibrous structure **10** may be freely, convolutely wound from the core end **12** out to the tail end **16** around core **24**. In another embodiment, the multi-ply fibrous structure **10** may be rolled without the use of a core (not shown). The tail end **16** of the multi-ply fibrous structure **10** comprises a consumer accessible tab **18** permitting a consumer to begin dispensing a never-before-used a rolled multi-ply product **10'**, by grasping the consumer accessible tab **18** and dispensing the multi-ply product, such as the rolled multi-ply product **10'**.

[0025] The consumer accessible tab **18** comprises two or more plies of fibrous structure that are bonded together via an adhesive, in the cross machine direction. The adhesive is applied in the machine direction and the cross machine direction. Any suitable adhesive can be used for forming the consumer accessible tab **18**. Nonlimiting examples of suitable adhesives, especially water soluble polymer adhesives are commercially available from Henkel Adhesives, National Starch and Chemical Company and HB Fuller. A nonlimiting example of a suitable water soluble polymer adhesive from National Starch is 18-345B.

[0026] In one embodiment, the adhesive is such that the adhesive only bonds the two or more plies of the fibrous structure making up the consumer accessible tab **18** without migrating through the consumer accessible tab plies to another ply or plies of fibrous structure that are not part of the consumer accessible tab **18**. This is especially true when the multi-ply fibrous structure **10** is in rolled form. In other words, the adhesive used in the consumer accessible tab **18** preferably does not bond the consumer accessible tab **18** to another portion of the multi-ply fibrous structure **10**.

[0027] The consumer accessible tab **18** extends from the tail end **16** toward the core end **12** along the multi-ply fibrous structure **10** in the machine direction for a distance of from about 2 cm to about 15 cm, preferably from about 3 cm to about 10 cm and/or from about 4 cm to about 8 cm.

[0028] The consumer accessible tab **18** may extend completely or partially across the multi-ply fibrous structure **10** in the cross machine direction.

[0029] The rolled multi-ply product **10'** comprises a tail seal glue **21** that binds the tail **14** of the multi-ply fibrous structure **10** when in roll form to itself, another portion of the multi-ply product **10**.

[0030] The consumer accessible tab **18** or any portion thereof is more proximal to the tail end **16** of the rolled multi-ply product **10'** than is the tail seal glue **21**.

[0031] As shown in Figs. 2A-C, the multi-ply product **10'''** of the present invention comprises a multi-ply fibrous structure **10''** having a first ply **20''** and a second ply **22''**. The multi-ply of the fibrous structure **10''** are ply bonded

together in a face-to-face manner by any suitable means known to those of ordinary skill in the art, such as by mechanical, chemical and/or electrostatic forces. Typically, a ply bond adhesive is used to bond the multi-ply together. The ply bond adhesive is typically applied to at least a surface of at least one ply which will be in contact with one or more surfaces of other plies. Further, typically the ply bond adhesive is applied in the machine direction.

[0032] The multi-ply fibrous structure **10''** comprises a core end **12''** and a tail **14''** comprising a tail end **16''**.

[0033] As shown in Fig. 2C, the multi-ply fibrous structure **10''** is in the form of a rolled multi-ply product **10'''**. In order to produce the rolled multi-ply product **10'''**, the multi-ply fibrous structure **10''** may be freely, convolutely wound from the core end **12''** out to the tail end **16''** around core **24''**. The tail end **16''** of the multi-ply fibrous structure **10''** comprises a consumer accessible tab **18''** permitting a consumer to begin dispensing a never-before-used roll of the rolled multi-ply product **10'''** by grasping the consumer accessible tab **18''** and dispensing the multi-ply product, such as the rolled multi-ply product **10'''**.

[0034] The consumer accessible tab **18''** comprises two or more plies of fibrous structure that are bonded together via an adhesive, in the cross machine direction. The adhesive is applied in the machine direction and the cross machine direction. Any suitable adhesive can be used for forming the consumer accessible tab **18''**.

[0035] Nonlimiting examples of suitable adhesives, especially water soluble polymer adhesives are commercially available from Henkel Adhesives, National Starch and Chemical Company and HB Fuller. A nonlimiting example of a suitable water soluble polymer adhesive from National Starch is 18-345B.

[0036] In one embodiment, the adhesive is such that the adhesive only bonds the two or more plies of the fibrous structure making up the consumer accessible tab **18''** without migrating through the consumer accessible tab plies to another ply or plies of fibrous structure that are not part of the consumer accessible tab **18''**. This is especially true when the multi-ply fibrous structure **10''** is in rolled form. In other words, the adhesive used in the consumer accessible tab **18''** preferably does not bond the consumer accessible tab **18''** to another portion of the multi-ply fibrous structure **10''**.

[0037] The consumer accessible tab **18''** extend from the tail end **16''** toward the core end **12''** along the multi-ply fibrous structure **10''** in the machine direction for a distance of from about 2 cm to about 15 cm, preferably from about 3 cm to about 10 cm and/or from about 4 cm to about 8 cm.

[0038] The consumer accessible tab **18''** may extend completely or partially across the multi-ply fibrous structure **10''** in the cross machine direction.

[0039] The rolled multi-ply product **10'''** comprises a tail seal glue **21''** that binds the tail **14''** of the multi-ply fibrous structure **10''** when in roll form to itself, another portion of the multi-ply fibrous structure **10''**.

[0040] The consumer accessible tab 18" or any portion thereof is more proximal to the tail end 16" of the rolled multi-ply product 10"" than is the tail seal glue 21".

[0041] Further, as shown in Figs. 2A-C, the core end 12" may comprise a bonded area similar to the consumer accessible tab 18".

[0042] In one embodiment, the adhesive used in the consumer accessible tab is more concentrated than the ply bond adhesive used to bond the two or more plies together throughout the multi-ply fibrous structure.

[0043] In another embodiment, the bond strength within the consumer accessible tab is greater than the ply bond strength throughout the multi-ply fibrous structure.

Methods

[0044] The multi-ply product of the present invention may be made by any suitable process known by those skilled in the art. A nonlimiting example of a suitable process for making a multi-ply product with a consumer accessible tab is described herein.

[0045] As shown in Fig. 3, two or more parent rolls, in this case parent roll 26 and parent roll 28 each containing their respective fibrous structures 26' and 28' may be unwound during the process of making a multi-ply fibrous structure 29 in accordance with the present invention.

[0046] The two plies of fibrous structure 26' and 28' are ply bonded together by any suitable means known to those of ordinary skill in the art.

[0047] In one embodiment, at least one surface of at least one of the plies of fibrous structure, in this case the surface of fibrous structure ply 28' may be contacted with an adhesive 32 by an adhesive applicator 30. The adhesive 32 extends across the surface of the fibrous structure 28' in the cross machine direction.

[0048] A sufficient amount of the adhesive 32 is applied to the surface of fibrous structure ply 28' in order to provide an effective consumer accessible tab 34" in the ultimate multi-ply product, such as the rolled multi-ply product 29'.

[0049] In one embodiment, the adhesive 32 is applied to the fibrous structure 28' in the cross machine direction to form an adhesive area 34.

[0050] Once the adhesive area 34 is formed, then fibrous structure ply 26' and fibrous structure ply 28' may be combined by any suitable means known to those of ordinary skill in the art. A nonlimiting example of a suitable means of combining the plies together is by passing the two plies through a marrying roll/combining roll system comprising roll 36 and roll 38.

[0051] After the two plies 26' and 28' are combined together to form a multi-ply fibrous structure 29, the multi-ply fibrous structure 29 is then cut in the cross machine direction in the adhesive area 34 by any suitable means, such as a cutting device 40, such that a severed piece of multi-ply fibrous structure 29' is formed. As a result, the adhesive area 34 is split into two distinct portions 34' and 34". Alternatively, the adhesive area 34 may be only

on one side of the severing line rather than on both sides.

[0052] As shown in Fig. 4, the severed piece of multi-ply fibrous structure 29', which includes adhesive portion 34" can be rewound on a core 42 or on itself if no core is used concurrently with the cutting operation or subsequent to the cutting operation. Upon rewinding the severed pieces of multi-ply fibrous structure 29' onto the core 42, the severed piece of multi-ply fibrous structure 29' comprises a tail 44 which comprises a tail end 46. The tail 44 comprises the adhesive portion 34" (consumer accessible tab precursor), which ultimately forms the consumer accessible tab on the multi-ply product once the severed piece of multi-ply fibrous structure 29' has been completely rewound around the core 42.

[0053] The uncut multi-ply fibrous structure 29 can then be attached to a new core by its core end 48 in order to start rewinding the next severed piece of multi-ply fibrous structure. The uncut multi-ply fibrous structure 29 comprises adhesive portion 34', which extends from the core end 48 along the uncut multi-ply fibrous structure 29.

Claims

1. A rolled multi-ply product (10', 10'") comprising a multi-ply bonded fibrous structure (10, 10'") having a core end (12, 12'") and a tail (14, 14'") comprising a tail end (16, 16'"), wherein the multi-ply fibrous structure is freely, convolutedly wound from the core end out to the tail end, wherein the tail of the multi-ply fibrous structure is tail sealed to the multi-ply fibrous structure by a tail seal glue (21, 21'") and comprises a consumer accessible tab (18, 18'") **characterized in that** the consumer accessible tab (18, 18'") comprises at least two plies (20,22,20'',22'') of the multi-ply fibrous structure (10, 10'") bonded together via an adhesive in the cross machine direction and wherein the consumer accessible tab (18, 18'") extends from the tail end (16, 16'") toward the core end (12, 12'"), along the multi-ply fibrous structure, in the machine direction, for a distance from 2 cm to 15 cm and wherein the consumer accessible tab (18, 18'") is more proximal to the tail end (16, 16'") of the multi-ply fibrous structure than is the tail seal glue (21, 21'").
2. The rolled multi-ply product according to claim 1 wherein the multi-ply fibrous structure consists of two plies of a fibrous structure.
3. The rolled multi-ply product according to any of the preceding claims wherein the multi-ply product is a sanitary tissue product.
4. A method for making a rolled multi-ply product according to any of the preceding claims, wherein the rolled multi-ply product comprises a consumer accessible tab (18,18'), the method comprising the steps of:

- a. providing two or more plies of a fibrous structure (26', 28') wherein each of the two or more plies of fibrous structure comprises a tail end and a core end;
- b. adhesively binding (32) the two or more plies of fibrous structure together at their respective tail ends in a face-to-face relationship in the cross machine direction, such that a consumer accessible tab precursor (34) is formed in order to form a consumer accessible tab (34'') for a distance from 2 cm to 15 cm in the machine direction;
- c. ply bonding the two or more plies of fibrous structure together from their tail end to their core end to form a multi-ply fibrous structure (29);
- d. severing the multi-ply fibrous structure in the cross machine direction such that a portion (34', 34'') of the consumer accessible tab precursor is on one or both sides of the severing line; and
- e. freely, convolutely winding the multi-ply fibrous structure from the core end out to the tail end to form the rolled multi-ply product.

Patentansprüche

1. Aufgerolltes mehrlagiges Produkt (10', 10'''), das eine mehrlagige gebundene Faserstruktur (10', 10'') mit einem Kernende (12, 12'') und einem Ende (14, 14''), das wiederum ein Endstück (16, 16'') aufweist, umfasst, wobei die mehrlagige Faserstruktur von dem Kernende zum Endstück frei und gefaltet gewickelt ist, wobei das Ende der mehrlagigen Faserstruktur mit der mehrlagigen Faserstruktur über einen Endverschlussklebstoff (21, 21'') endstückverklebt ist und einen durch den Verbraucher zugänglichen Streifen (18' 18'') umfasst, **dadurch gekennzeichnet, dass** der durch den Verbraucher zugängliche Streifen (18, 18'') mindestens zwei Lagen (20, 22, 20'', 22'') der mehrlagigen Faserstruktur (10, 10'') umfasst, die miteinander über ein Haftmittel in Maschinenquerrichtung verbunden sind, und wobei sich der durch den Verbraucher zugängliche Streifen (18, 18'') vom Endstück (16, 16'') in Richtung Kernende (12, 12'') entlang der mehrlagigen Faserstruktur in Maschinenlaufrichtung über eine Länge von 2 cm bis 15 cm erstreckt, und wobei der durch den Verbraucher zugängliche Streifen (18, 18'') näher am Endstück (16, 16'') der mehrlagigen Faserstruktur angeordnet ist als der Endverschlussklebstoff (21, 21'').
2. Aufgerolltes mehrlagiges Produkt nach Anspruch 1, wobei die mehrlagige Faserstruktur aus zwei Lagen einer Faserstruktur besteht.
3. Aufgerolltes mehrlagiges Produkt nach einem der vorstehenden Ansprüche, wobei das mehrlagige

Produkt ein Hygienetuchprodukt ist.

4. Verfahren zur Herstellung eines aufgerollten mehrlagigen Produkts nach einem der vorstehenden Ansprüche, wobei das aufgerollte mehrlagige Produkt einen durch den Verbraucher zugänglichen Streifen (18, 18') umfasst, wobei das Verfahren folgende Schritte umfasst:
 - a. Bereitstellen von zwei oder mehreren Lagen einer Faserstruktur (26' 28'), wobei jede der zwei oder mehreren Lagen Faserstruktur ein Endstück und ein Kernende umfassen;
 - b. Klebverbinden (32) der zwei oder mehreren Lagen Faserstruktur miteinander an ihren jeweiligen Endstücken in einander zugewandter Beziehung in Maschinenquerrichtung, so dass ein durch den Verbraucher zugänglicher Streifenvorläufer (34) gebildet wird, um einen durch den Verbraucher zugänglichen Streifen (34'') über eine Länge von 2 cm bis 15 cm in Maschinenlaufrichtung zu bilden;
 - c. Lagenverbinden der zwei oder mehreren Lagen Faserstruktur miteinander ab ihrem Endstück bis zu ihrem Kernende zum Bilden einer mehrlagigen Faserstruktur (29);
 - d. Trennen der mehrlagigen Faserstruktur in Maschinenquerrichtung, so dass ein Teil (34' 34'') des durch den Verbraucher zugänglichen Streifenvorläufers auf einer oder beiden Seiten der Trennlinie liegt; und
 - e. freies gefaltetes Aufwickeln der mehrlagigen Faserstruktur vom Kernende bis zum Endstück zum Bilden des aufgewickelten mehrlagigen Produkts.

Revendications

1. Produit multicouche roulé (10', 10''') comprenant une structure fibreuse liée multicouche (10', 10'') ayant une extrémité de noyau (12, 12'') et une queue (14, 14'') comprenant une extrémité de queue (16, 16''), dans lequel la structure multicouche fibreuse est enroulée librement, par circonvolution à partir de l'extrémité de noyau jusqu'à l'extrémité de queue, dans lequel la queue de la structure fibreuse multicouche est scellée en queue à la structure fibreuse multicouche par une colle de joint de queue (21, 21'') et comprend une languette accessible par le consommateur (18' 18'') **caractérisée en ce que** la languette accessible par le consommateur (18, 18'') comprend au moins deux couches (20, 22, 20'', 22'') de la structure fibreuse multicouche (10, 10'') liées ensemble par le biais d'un adhésif dans la direction transversale de la machine et dans lequel la languette accessible par le consommateur (18, 18'') s'étend à partir de l'extrémité de queue (16, 16'') en direction

de l'extrémité de noyau (12, 12"), le long de la structure fibreuse multicouche, dans la direction de la machine, sur une distance allant de 2 cm à 15 cm et dans lequel la languette accessible par le consommateur (18, 18") est plus proche de l'extrémité de queue (16, 16") de la structure fibreuse multicouche que la colle de joint de queue (21, 21").

2. Produit multicouche roulé selon la revendication 1, dans lequel la structure fibreuse multicouche est constituée de deux couches d'une structure fibreuse.
3. Produit multicouche roulé selon l'une quelconque des revendications précédentes, où le produit multicouche est un produit de papier hygiénique.
4. Procédé pour fabriquer un produit multicouche roulé selon l'une quelconque des revendications précédentes, dans lequel le produit multicouche roulé comprend une languette accessible par le consommateur (18, 18"), le procédé comprenant les étapes consistant à :
 - a. fournir deux ou plusieurs couches d'une structure fibreuse (26' 28'), dans lequel chacune des deux ou plusieurs couches de structure fibreuse comprend une extrémité de queue et une extrémité de noyau ;
 - b. lier de manière adhésive (32) les deux ou plusieurs couches de structure fibreuse ensemble à leurs extrémités de queue respectives dans une relation face à face dans la direction de la machine croisée, de telle sorte qu'un précurseur de languette accessible par le consommateur (34) est formé afin de former une languette accessible par le consommateur (34") sur une distance allant de 2 cm à 15 cm dans la direction de la machine ;
 - c. lier en couches les deux ou plusieurs couches de structure fibreuse ensemble de leur extrémité de queue à leur extrémité de noyau de façon à former une structure fibreuse multicouche (29) ;
 - d. trancher la structure fibreuse multicouche dans la direction transversale de la machine de telle sorte qu'une partie (34' 34") du précurseur de languette accessible par le consommateur se trouve sur un ou les deux côtés de la ligne de tranchage ; et
 - e. enrouler librement, par circonvolution la structure fibreuse multicouche de l'extrémité de noyau jusqu'à l'extrémité de queue de façon à former le produit multicouche roulé.

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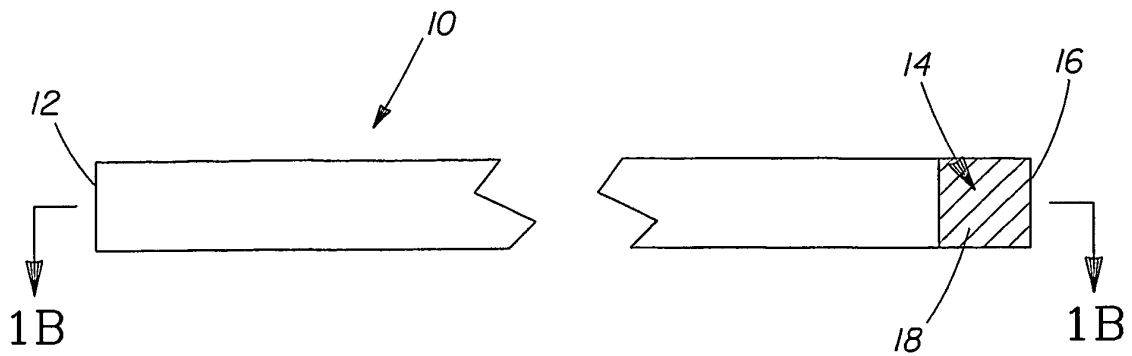


Fig. 1A

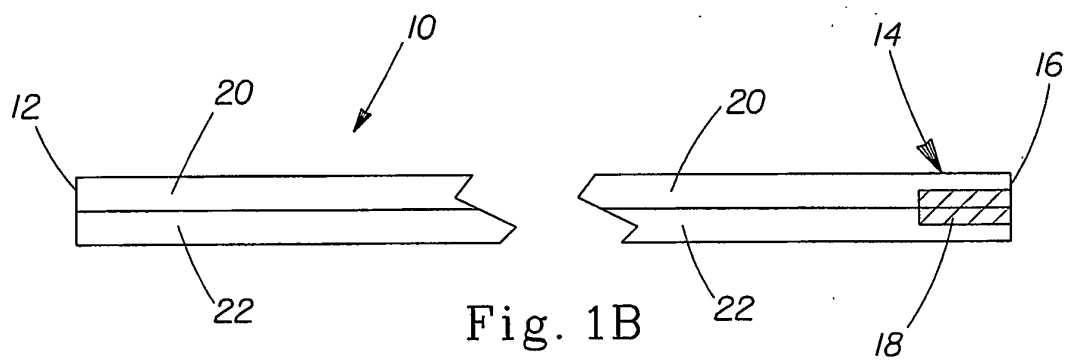


Fig. 1B

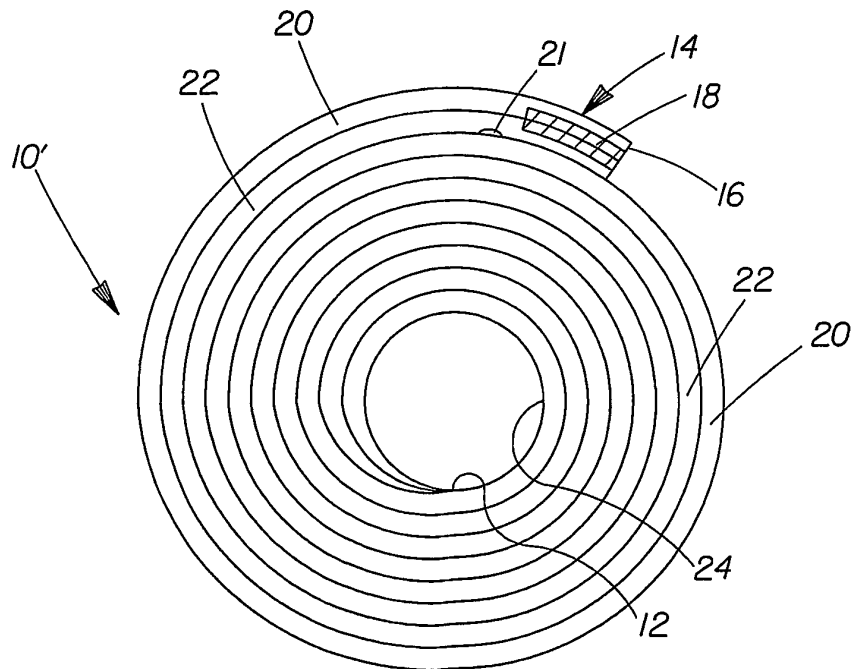


Fig. 1C

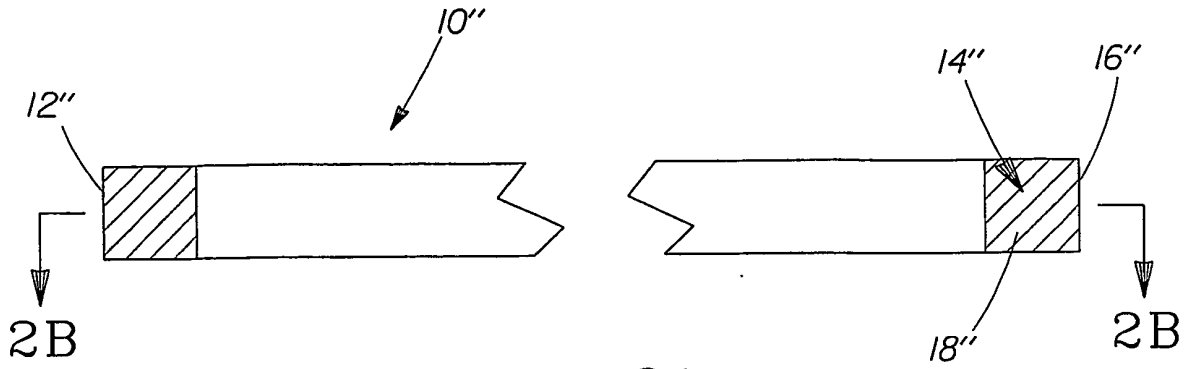


Fig. 2A

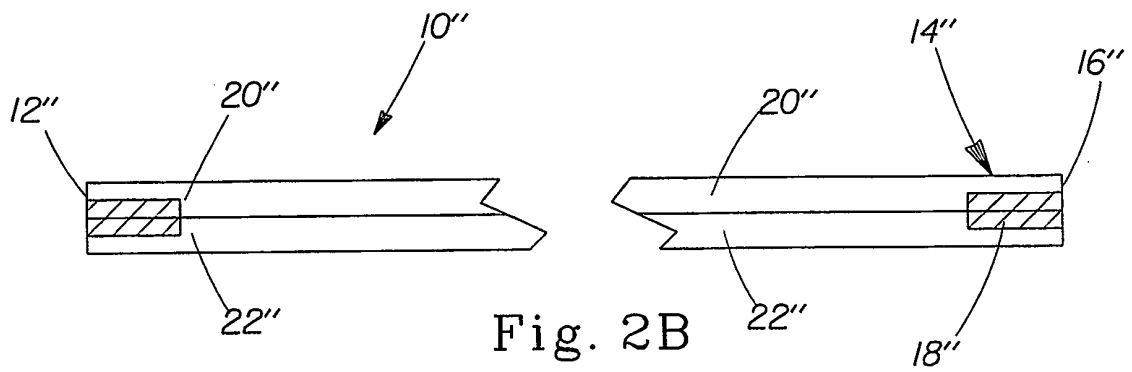


Fig. 2B

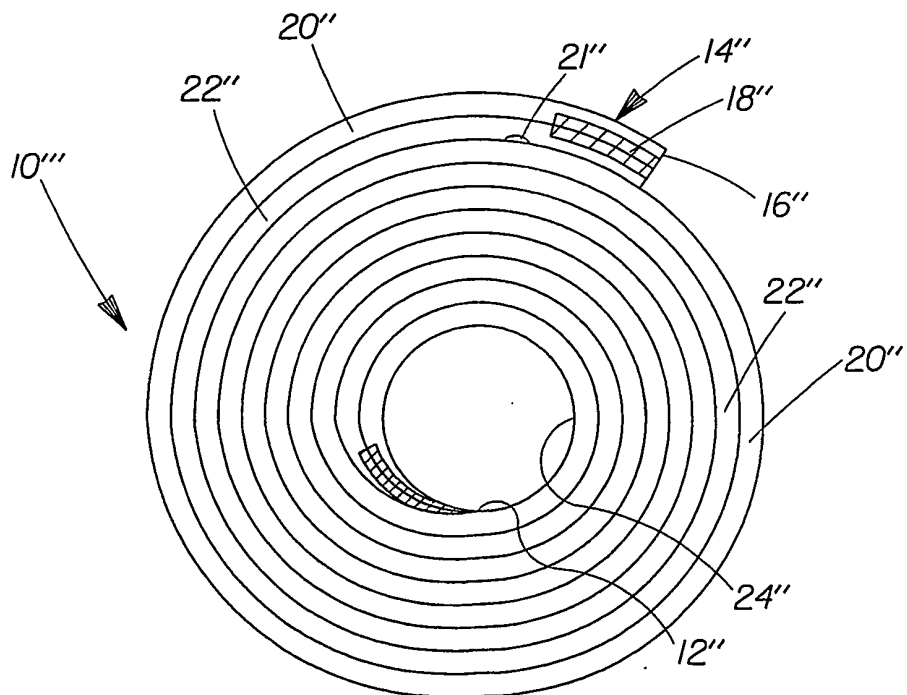


Fig. 2C

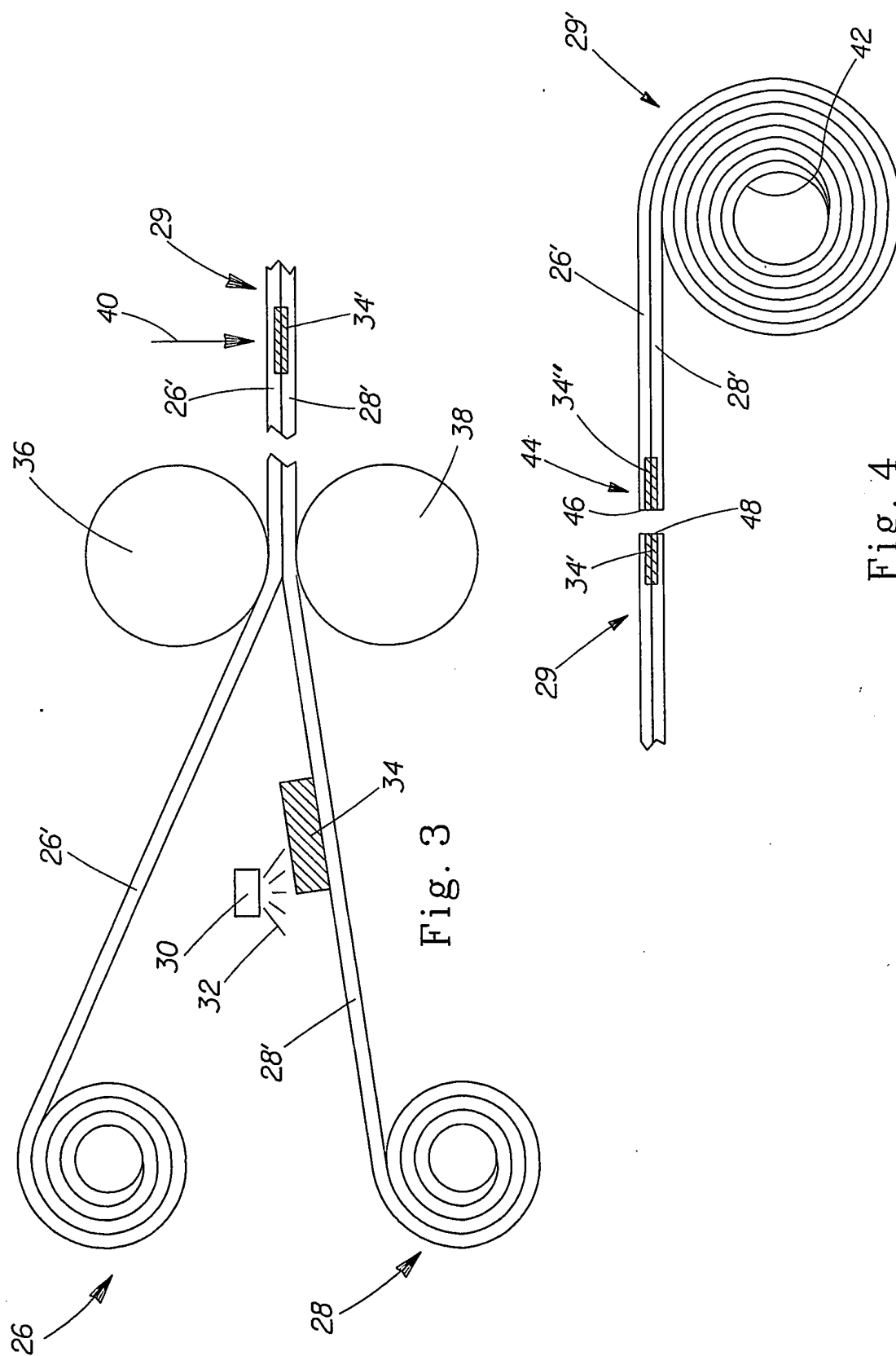


Fig. 3

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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