

UNITED STATES PATENT OFFICE

1,974,594

REENFORCING PAPER

Edward H. Angier, Framingham, Mass., assignor
to Edward H. Angier, as trustee

Original application November 29, 1930, Serial
No. 499,065. Divided and this application De-
cember 29, 1931, Serial No. 583,621

3 Claims. (Cl. 154-2)

This invention relates to the production of re-enforced sheet material such as paper reenforced with textile strands, which may be woven together into a fabric, and the object is to provide an improved method of preparing such paper, for example, for use as a building paper which will have superior qualities of cohesiveness, strength and resistance.

My invention will be well understood by reference to the following description of an illustrative embodiment thereof taken in connection with the accompanying drawing, wherein:—

Fig. 1 is a diagrammatic view of a process for producing a paper such as referred to; and

Figs. 2, 3 and 4 are broken, fragmentary, diagrammatic sections through the product at various stages of the process, as indicated by the section lines 2—2, 3—3 and 4—4 of Fig. 1 respectively.

I have herein disclosed my invention as a step in the production of the type of paper disclosed in my application Serial No. 499,065, filed Nov. 29, 1930, of which this application is a division. The product shown in Fig. 4 comprises an ex-

pansible paper consisting of two craped sheets. In the preferred form of the invention illustrated in the accompanying drawing I provide (see Fig. 4) an expansible paper consisting of two craped sheets 5 and 7, each of which is impregnated with water-resisting material which may be black asphalt or similar bituminous materials or mixtures forming at the outer face of each sheet and absorbed, substantially continuous film 9 and 11 respectively, the surface of the paper, however, not being tacky or sticky to the touch; the two sheets 5 and 7 receiving between them a layer of water-proofing material 12, which layer may carry embedded in the body thereof strands 13, preferably reticulated into a fabric, which will serve to reinforce the assembly as a whole and also to position the intervening layer 11, as will appear as the description proceeds.

The construction of the paper will be more fully understood from a description of Fig. 1 wherein I have illustrated diagrammatically and as if a continuous process a method of production. It will be understood that the process need not be thus continuous and that various features illustrated may or may not be used in all cases. For instance, I have herein disclosed the sheets 5 and 7 in the completed product as being rendered expansible by craping but for certain purposes the product may be made with plain inexpandible paper.

Referring now to Fig. 1 of the drawing, two webs 5 and 7 of sheet material, which conveniently may be a strong-bodied paper of the kraft type, are led from supply rolls, one, such as 5, over a coating roll 15 which supplies a regulated amount of waterproofing material of an adhesive character such as asphalt or other bituminous material to a face thereof and the two of them are pressed together by squeeze rolls 17 with the asphalt layer 20 between them, as illustrated in Fig. 2. This duplex assembly is in condition to be prepared for craping by being wetted in the water tank 21 and led over and pressed against the craping roll 23 to be crowded back on itself and craped by the doctor blade 25 in well known manner. The duplex craped assembly may be then led through a heating chamber 27 which may fuse the intervening film 20 causing it to be absorbed in the adjacent faces of the webs 5 and 7, and the two craped webs may then be separated, as indicated in Fig. 1 at the right of the chamber 27. In Fig. 3 is shown diagrammatically one of the two resulting sheets. The face of this web 5 which formerly opposed the web 7 has absorbed into it a portion of the material 20, as indicated by the stippling 9, and the other web 7 has similarly absorbed into it a quantity of the coating material, as indicated by the stippling 11. I prefer so to control the amount of material 20 and the heating that the absorbed material only partly penetrates the webs as indicated in Fig. 3, and, while none of it remains to form a tacky surface on what in the finished product will be an exterior face, the material at 9 and 11 only superficially enters the body of the web and forms substantially a continuous film resisting penetration of moisture.

The uncoated faces of the webs 5 and 7 are then united with an intervening layer 12 of asphalt or the like between them, and I have herein shown them as led down through the bite of a pair of rolls 29 between which rolls is maintained a pool 31 of fluid asphalt. From these rolls the two webs thus united and duplexed may be led through a pair of rolls 31 which are heated as indicated diagrammatically by the showing of the steam pipes 33, and the assembly thus heated sufficiently to draw part of the intervening layer 12 into the body of the paper not previously impregnated with the material supplied from the layer 20 and now appearing in the form of the films 9 and 11. The amount of asphalt supplied is so generous and the heating is so carried on that the intervening layer 12 is not completely absorbed into the two sheets as is the layer 20 but remains as a substan-

tial continuous layer between the two webs, as indicated in Fig. 4.

In Fig. 1 I have also illustrated diagrammatically an improved method of combining strand material 13 with a multi-ply paper. This strand material 13, which may take the form of a loosely woven fabric such as burlap of about $\frac{1}{2}$ " or $\frac{1}{4}$ " mesh, may be fed from a supply roll 37 through the pool 31 of impregnating material in such manner that the sheet of strands is impregnated and also picks up and carries with it a substantial layer of the molten material before contacting with the webs. The reinforcing material 13 is preferably supplied slackly, as indicated diagrammatically in the figure by the showing of a drive 39 for roll 37.

When a reinforcement of strands is incorporated in a paper structure in the manner described, it is not merely pasted between the two webs or to their faces but, as illustrated in Fig. 4, is embedded in the layer 12 of waterproofing material. An important function of such a material under these circumstances is to position such a layer between the two webs 5 and 7 to resist displacement or flow thereof in such manner as might leave thin or bare spots between the two webs.

The improved product shown is applicable to various uses. Among them may be mentioned, in the case where the webs 5 and 7 are paper material of strong body, use as a building paper to be embodied in a building structure, as described in my application Serial No. 499,064, filed Nov. 29, 1930. In this case the webs 5 and 7 are preferably craped as shown so that the material may expand under the strains which the building undergoes after erection. The substantial layer of material 12 interposed between the webs serves to seal about the nails or similar fastenings by which the paper is secured in position in the structure.

I am aware that the invention may be embodied

in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A method of preparing reenforced waterproof paper which comprises leading opposed webs of paper downwardly in converging path to a horizontal line of opposition along which they are pressed together, maintaining a pool of adhesive waterproofing material in the trough formed between the webs and leading spaced reinforcing strands through the pool to said line.

2. A method of preparing reenforced waterproof paper which comprises leading opposed webs of paper downwardly in converging path to a horizontal line of opposition along which they are pressed together, maintaining a pool of adhesive waterproofing material in the trough formed between the webs and leading an open-meshed reticulated reinforcement defining substantial spaces between the elements thereof through said pool whereby its elements are saturated and it picks up a layer of said material and then past said line between the webs with the layer of material carried thereby.

3. A method of preparing reenforced waterproof paper which comprises leading opposed webs of paper downwardly in converging path to a horizontal line of opposition along which they are pressed together, maintaining a pool of adhesive waterproofing material in the trough formed between the webs and leading first through the pool a sheet of spaced strands adapted to pick up and to hold between the individual strands a layer of the material and then past said line between the webs.

EDWARD H. ANGIER.

CERTIFICATE OF CORRECTION.

Patent No. 1,974,594.

September 25, 1934.

EDWARD H. ANGIER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 33, for "and absorbed" read an adsorbed; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 16th day of October, A. D. 1934.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.



US006221211B1

(12) **United States Patent**
Hollenberg et al.

(10) **Patent No.: US 6,221,211 B1**
(45) **Date of Patent: Apr. 24, 2001**

(54) **MULTI-PLY TISSUES HAVING INTERNAL INDICIA**

(56) **References Cited**

(75) **Inventors:** David Henry Hollenberg, Neenah;
Patricia Mary Exarhos, Appleton;
Brigitte Kay Welgert, Neenah; Lorrie
Lynn Krynock, Appleton, all of WI
(US)

U.S. PATENT DOCUMENTS

2,143,682 * 1/1939 Brown 162/126
4,504,357 * 3/1985 Holbein et al. 162/134

FOREIGN PATENT DOCUMENTS

1268262 * 3/1972 (GB) 162/126
63-270896 * 11/1988 (JP) 162/134

(73) **Assignee:** Kimberly-Clark Worldwide, Inc.,
Neenah, WI (US)

(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

* cited by examiner

Primary Examiner—Peter Chin

(21) **Appl. No.:** 08/192,027

(22) **Filed:** Feb. 4, 1994

(51) **Int. Cl.⁷** D21H 27/00

(52) **U.S. Cl.** 162/123; 162/126; 162/132;
162/134; 162/158; 162/161

(58) **Field of Search** 162/112, 134,
162/123, 126, 127, 132, 158, 161

(57) **ABSTRACT**

A multi-ply tissue contains an internal indicia, such as a printed pattern applied to the center ply, which is visible through the outer plies of the tissue and which indicates the presence of some unique ingredients within the tissue product.

19 Claims, 2 Drawing Sheets



1

MULTI-PLY TISSUES HAVING INTERNAL INDICIA

BACKGROUND OF THE INVENTION

A standard tissue is normally white or of a uniform color. In some instances decorative patterns may be printed on the outside of the tissue to enhance its appeal to the consumer. Nevertheless, tissues having additional special ingredients such as lotions, virucides, encapsulated menthol, and the like do not have a visually distinctive appearance relative to standard tissues. Instead, they are white, colored or printed just like other tissues and rely on their packaging to convey to the consumer that they have distinctive properties or characteristics. It would be advantageous if tissues containing special ingredients could be visually distinguished from other tissues.

SUMMARY OF THE INVENTION

It has now been discovered that certain tissues, such as those useful as facial or bath tissues, can be provided with a distinctive visual cue or indicator which indicates that such tissues contain unique ingredients or properties relative to conventional or "normal" tissues. This visual indicator is accomplished by printing, dyeing, or otherwise coloring an internal surface of one or more plies of a multi-ply tissue. Because of the relative transparency of the thin tissue sheets used in multi-ply tissue products, the color or pattern imparted to the internal surface is visible through the outer ply, thereby providing an internal indicia that the tissue contains special ingredients. The visibility of the internal indicia can be controlled by the basis weight of the outer plies and the intensity or pattern of the coloration. The appearance of the internal indicia can also be altered by coloration or patterns on one or both outer plies. Regardless of the particular color or pattern chosen for the internal indicia, the presence of the outer ply creates a softened image or coloration which is very distinctive.

Hence in one aspect, the invention resides in a tissue comprising two or more plies and thereby having two or more internal ply surfaces, two of said plies being outer plies, wherein one or more of said internal ply surfaces contains a colored or patterned indicia which is visible through at least one of said outer plies. The plies can be attached to each other by crimping the edges, gluing, or other suitable means. The outer plies may or may not be patterned or colored to further enhance the perception of differences between or among the plies.

In another aspect, the invention resides in a multi-ply tissue comprising two outer plies and one or more center plies, at least one of said center plies containing a colored or patterned indicia which is visible through both outer plies. The number of center plies can be one, two, three or more. Multi-ply tissues having three or four total plies are particularly suitable.

In a further aspect, the invention resides in a two-ply tissue, wherein one of the internal ply surfaces contains a colored or patterned indicia which is visible through both plies.

The tissue products of this invention are especially suitable as facial or bath tissues, but can also be used for paper towels and the like whenever there is a need to provide a distinctive internal indicia. The basis weight of the outer plies must be sufficiently low to enable the internal indicia to be visible. By this is meant that an ordinary user can detect the indicia with the naked eye during normal use. In some instances, lightweight outer plies may also be desired

2

able to allow the special additive or ingredient to pass from the inner plies to the outside surface of the tissue upon receiving light pressure during pressing or rubbing. This can be particularly desirable for lotions or fragrances, for example. The tissue sheets used as the outer plies can have a basis weight of from about 10 to about 60 grams per square meter, more suitably from about 10 to about 45 grams per square meter. If the basis weight is too great, the opacity of the tissue sheet will prevent the indicia from showing through. To this end, regardless of the basis weight and fiber composition of the outer plies, the opacity of the outer plies should be less than about 85 as measured by TAPPI T-425.

The internal indicia can be any pattern or color which shows through the outer plies. Suitable patterns particularly include, without limitation, decorative patterns which represent objects, such as floral patterns, caricatures, and the like. Other suitable patterns include geometric and abstract patterns, such as repeating dots, squares, rhomboids, triangles and the like. Also suitable are solidly colored (or substantially solidly colored) center plies which are different in color than one or both outer plies. For example, a center ply can be dyed blue or green and placed between two white outer plies. This can indicate to the user that the center ply contains a medicant or some ingredient not present on the outer plies. This is particularly advantageous for a three-ply virucidal tissue as disclosed in U.S. Pat. No. 4,738,847 entitled "Multi-ply Virucidal Product" issued Apr. 19, 1988 to Rothe et al., which is hereby incorporated by reference. Such products contain a colorless virucidal composition substantially confined to the center ply, which in fact would not be visually detectable without some kind of indicia. In the case of a two-ply product, the indicia can be suitably applied to the internal ply surface(s) of one or both plies. Alternatively, using a layered headbox, the fibers of an inner layer of a multilayered sheet can be colored differently from the fibers forming the other layers, including dispersing colored fibers among the other fibers of an inner layer.

The internal indicia can be applied to the tissue product by any technique suitable for this purpose. Such techniques include, without limitation, printing, spraying, beater dyeing the fibers, coating, and the like. The indicia can be solid colors or patterns. The indicia can include other ingredients, such as virucides, emollients, encapsulated scents, and the like. Alternatively, these other ingredients can be separately applied, which application can be coextensive with the indicia or not. For example, a virucide can be sprayed or printed over the entire surface of a center ply, while the indicia can be a printed ink or dye pattern. Alternatively, the virucide can be incorporated into the indicia ink so that the indicia marks the portions of the tissue that contain the virucide. Either way, the indicia indicates the presence of the virucide (or other additive) in the tissue.

Suitable ingredients which can be incorporated into the tissue product in conjunction with the internal indicia include, without limitation, virucides, emollients, cleansing agents, moisturizers, softening agents, encapsulated fragrances such as menthol, eucalyptus, bayberry, and poipourri, and the like.

These and other aspects of the invention will be further described in connection with the Drawing and Examples.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cut-away plan view of a three-ply tissue in accordance with this invention, illustrating a center ply having a printed pattern internal indicia.

FIG. 2 is a schematic cross-sectional view of the tissue of FIG. 1, illustrating the relationship among the three plies.

3

FIG. 3 is a photograph of a three-ply tissue in accordance with this invention, in which one outer ply has been partially peeled back to expose the printed center ply.

FIG. 4 is a photograph of a three-ply tissue in accordance with this invention, similar to that of FIG. 3.

FIG. 5 is a schematic cross-sectional view similar to that of FIG. 2, but for a two-ply tissue in accordance with this invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 is a cut-away plan view of a three-ply tissue in accordance with this invention. As shown, outer ply 2 overlays inner ply 3, which contains a printed decorative floral pattern 4.

FIG. 2 is a schematic cross-sectional view of a three-ply tissue in accordance with this invention. Shown is a first outer ply 10, a second outer ply 11, a single inner ply 12, internal ply surfaces 13, 14, 15, and 16, and an internal indicia pattern of printed ink deposits 17. The printed ink deposits represent the floral pattern depicted in FIG. 1.

FIG. 3 is a photograph of a three-ply facial tissue as depicted in FIGS. 1 and 2. All three plies are white. The center ply contains an internal indicia consisting of a green printed floral pattern, which is visible through the outer plies as shown. For a virucidal tissue, for example, the center ply could be separately treated overall with a suitable virucide, with the presence of the floral pattern indicating that the center ply contained the virucide. Of course, the floral pattern internal indicia could represent the presence of many other ingredients or additives as herein described.

FIG. 4 is a photograph of a three-ply facial tissue similar to that of FIG. 3, but in which the center ply was printed green substantially overall, leaving an unprinted pattern of white portions in the same floral pattern of FIG. 3. In this embodiment, because of the substantially overall printing of the inner ply, the virucide or other additive can be incorporated into the green printing medium to get substantial coverage, provided the virucide or other additive is compatible with the colorant. Of course, the virucide or other ingredient could also be applied separately as would likely be the case in the FIG. 3 embodiment.

FIG. 5 is a schematic cross-sectional view of a two-ply product of this invention, similar to FIG. 2. Shown are outer plies 20 and 21, internal ply surfaces 22 and 23, and internal indicia 24. For a two-ply product, it is desirable that the internal indicia be muted sufficiently by the thickness of the two plies to be apparent that the internal indicia is present on the inside of the product rather than on the outside in order to distinguish from conventional printed tissues.

EXAMPLES

Example 1

A roll of three-ply white creped tissue, each ply having a basis weight of 9 pounds per 2880 square feet (15.2 grams per square meter), was separated into one roll of two-ply tissue and one roll of single-ply tissue. The two-ply roll was unwound and passed through a flexo-graphic printer, which printed a colored (green) floral pattern internal indicia on the top ply as illustrated in FIG. 3. The printed two-ply sheet was then passed through a spray applicator, which sprayed a virucidal solution onto the surface of the printed ply. The virucidal solution consisted of about 37 weight percent citric acid, about 19 weight percent malic acid, about 25 weight

4

percent sodium lauryl sulfate, and about 20 weight percent water. The spray area coverage on the surface of the printed ply was about 100 percent. The add-on amount of the virucidal solution was about 2.8 milligrams of solids per square inch (6.45 square centimeters).

The previously-separated single-ply sheet was then recombined with the printed/treated two-ply sheet such that the single-ply sheet covered the printed/treated ply. Hence the printed/treated ply became the inner ply of the resulting three-ply tissue. The recombined three-ply tissue was passed through a flat bed dryer having a temperature of about 300° F. (149° C.). The foregoing process was carried out on pilot equipment at a speed of about 250 feet per minute (77 meters per second).

The resulting three-ply product appeared as illustrated in FIG. 3, having an internal indicia which was visible through both outer plies.

Example 2

A three-ply virucidal tissue was produced substantially as described in Example 1, except the printed pattern substantially covered the entire sheet, leaving unprinted white areas having a floral pattern.

The resulting three-ply product appeared as illustrated in FIG. 4, having an internal indicia which was visible through both outer plies.

Example 3

A three-ply tissue was prepared as described in Example 1. The three-ply tissue was then passed through a rotogravure printing station where a silicone emulsion was applied to both outer plies. The resulting virucidal tissue had good softness as well as being virucidally effective.

It will be appreciated that the foregoing figures and examples, given for purposes of illustration, are not to be construed as limiting the scope of this invention, which is defined by the following claims and all equivalents thereto.

We claim:

1. A tissue comprising two or more plies and thereby having two or more internal ply surfaces, two of said plies being outer plies, wherein one or more of said internal surfaces contains a colored or patterned indicia which is visible through at least one of said outer plies.
2. The tissue of claim 1 consisting of two plies.
3. The tissue of claim 2 wherein only one of said internal ply surfaces contains a colored or patterned indicia.
4. The tissue of claim 3 wherein the indicia is a printed pattern.
5. The tissue of claim 1 comprising two outer plies and a center ply.
6. The tissue of claim 5 wherein the center ply contains a colored or patterned indicia.
7. The tissue of claim 6 wherein the indicia is a printed pattern.
8. The tissue of claim 5 wherein the indicia is a solid color different from the color of the outer plies.
9. The tissue of claim 5 wherein the center ply contains a virucide.
10. The tissue of claim 5 wherein the center ply contains an emollient.
11. The tissue of claim 5 wherein the center ply contains an encapsulated fragrance.
12. The tissue of claim 11 wherein the fragrance is menthol.
13. The tissue of claim 1 consisting of four plies.
14. A three-ply facial tissue comprising two outer tissue plies and an inner tissue ply crimped together at the edges of

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCION DE NUEVAS CREACIONES

2020
Bogotá, D.C.,

Doctor
J. IAN RAISBECK
Abogado

ASUNTO Radicación 06-42753
 Trámite 011
 Evento 378
 Actuación 430
 Oficio 08792
 Folios 04

Patente de Invención	☒	Patente de Modelo de Utilidad	☐
Vía PCT (fase nacional)	☐	Cap. I	☒
		Cap. II	☒
No. Sol. Internacional	<u>PCT/US2004/026913</u>		
Fecha de Presentación Internal.	<u>18 de agosto de 2004</u>		

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción:	Folios: 55 a 84	como se radicó inicialmente
Reivindicaciones:	Folios: 85 a 93	como se radicó inicialmente
Figuras:	Folios: 114 a 118	
Prioridad:	US 10/719,638, 21 de noviembre de 2003	

2. Objeto de la invención

Titulo de la invención:
Método para cambiar la orientación de las capas dentro de un producto de capas múltiples (folio 1).

El problema planteado en esta solicitud es como lograr separar diferentes capas dentro de un producto con múltiples capas sin el uso de equipos de conversión nuevos o sin reconstruirlos.

Para solucionar este problema técnico se desarrolla un proceso para volver a orientar un estrato tratado dentro de un producto de estratos múltiples.

Clasificación internacional (IPC) en B65H39/16,41/00.

3. De la solicitud de Patente (según el caso)

Descripción (artículo 28 D. 486)

- La descripción tiene problemas de claridad dado que no se presenta la relación entre el problema técnico planteado y la solución suministrada por

la invención, dado que en la descripción se plantea la reorientación de una de las capas múltiples tratadas pero no se aporta evidencia del efecto logrado con este paso en el tejido de capas múltiples reorientado y un tejido de capas múltiples ya conocido dentro del estado de la técnica no reorientado y que también es tratado.

Por lo anterior la descripción no cumple con el requisito de claridad y/o divulgación completa lo que haría difícil su comprensión y ejecución de acuerdo al art. 28 de la Decisión 486.

Como puede observarse la descripción tiene serios problemas de claridad pero se le indica al solicitante que respecto a la información requerida, no se admitirá modificaciones que amplíen el objeto inicial de la invención, sin perjuicio de lo anterior se aceptarían: (i) documentos relevantes del estado de la técnica no citados siempre y cuando no incluya aclaraciones, o comentarios del solicitante, respecto a la invención; (ii) adaptación de la descripción a las reivindicaciones; (iii) otras de naturaleza similar.

Reivindicaciones (artículo 30 D 486)

- En la reivindicación 1, 11 y 21 se incluyen el paso "desenrollar el rollo", que no aporta ningún efecto técnico al método reivindicado dado que el producto final de este proceso es un tejido reorientado con múltiples capas obtenido hasta el paso anterior a este.
- No hay concisión entre las reivindicaciones independientes 1, 11 y 21 dado que todas tienen el mismo alcance que es lograr la orientación de un tejido de múltiples capas.

Por lo anterior, el capítulo reivindicatorio no cumple con el requisito de claridad y concisión de acuerdo al art. 30 de la Decisión 486.

4. Determinación del Estado de la Técnica

La fecha para determinar el estado de la técnica es el 13 de enero de 2005, de acuerdo a la fecha de prioridad invocada.

Teniendo en cuenta la anterior fecha indicada, se realiza la búsqueda de las anterioridades de la presente solicitud, encontrándose los siguientes documentos relevantes:

Nº	Documento	Título	Fecha de publicación
D1	US1974594	REENFORCING PAPER	1934-09-25
D2	US6221211	MULTI-PLY TISSUES HAVING INTERNAL INDICIA	2001-04-24

5. Análisis de patentabilidad (según requisito) (artículo 14 D486)

Es importante mencionar que el siguiente análisis de patentabilidad se realizó teniendo en cuenta las objeciones del numeral 3 de la presente comunicación.

Nivel Inventivo (artículo 18 D486)

Respecto a la reivindicación 1

La reivindicación 1 dice "Un método que comprende los pasos de:

- Proporcionar por lo menos dos capas, cada capa teniendo una primera y una

- segunda superficies opuestas;
- b) Combinar por lo menos dos capas juntas para formar un tejido de capas múltiples,
 - c) Tratar cualquiera de la primera o la segunda superficies opuestas de por lo menos una capa del tejido de capas múltiples formando un tejido de capas múltiples tratado en donde el proceso de tratamiento es seleccionado del grupo que consiste de impresión flexográfica, impresión de rotograbado, impresión de offset, prensa de letras, recubrimiento de fotograbado directo, recubrimiento de fotograbado descentrado, recubrimiento de rodillo inverso, recubrimiento flexográfico, recubrimiento de ranura, recubrimiento de embebido, recubrimiento de varilla, recubrimiento de cuchilla, recubrimiento de cuchilla de aire, recubrimiento de hoja, recubrimiento de deslizado, recubrimiento de cortina, de rociado, de rociado de derretido caliente, de aplicación de espuma, de cepillado y grabado;
 - d) Enrollar el tejido de capas múltiples tratado en un rollo;
 - e) Cambiar la orientación de la superficie tratada con el tejido de capas múltiples para formar un tejido de capas múltiples reorientado; y
 - f) desenrollar el rollo."

Respecto al estado de la técnica:

D1 describe la producción de laminados reforzados tal como papel reforzado con hebras textiles las cuales puede ser tenida junta con el tejido.

D2 describe en su ejemplo 1, el proceso de fabricación de un tisú multicapas con un indicio interno. Un rollo de un tisú con tres capas blancas crepadas es separado en un rollo con un tisú con dos capas y un rollo con un tisú de una capa. El rollo con dos capas es desenrollado y tratado con un impresión flexo gráfica. La hoja de dos capas impresa es luego pasada a través de spray aplicador, la cual es rociado con una solución virucida. La hoja con una capa simple previamente separada es recombinado con las hojas de dos capas impresa/ tratada tal que la hoja simple recubre la capas tratada (Col 3 líneas 55-68, Col 4 líneas 1-15).

Respecto a la reivindicación en estudio:

Respecto a la solicitud en estudio D2 es el documento del estado de la técnica más cercano porque describe un método para fabricar un tisú multicapas con al menos dos capas combinas que luego son tratadas y enrolladas en un rollo .

La solicitud colombiana se diferencia en D2 por el paso de cambiar la orientación de la superficie tratada con el tejido de capas múltiples para formar un tejido de capas múltiples reorientado.

El problema técnico objetivo en esta solicitud es como lograr que el laminado tratado con la clave visual y/o el recubrimiento virucida sea resistente, cohesivo y flexible.

Para solucionar el problema técnico objetivo, D1 describe que un proceso para reforzar papel impermeable el cual comprende suministrar dos hojas 5 y 7, donde la hoja 5 es cubierta con un material a prueba de agua luego son colocadas en frente y exprimidas en el rodillo (17). Luego las hojas son separadas. Las superficies las hojas 5 y 7 no cubiertas son luego unidas con una lámina intermedia de asfalto (Pág. 1 líneas 55-93, Fig. 1).