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

(11) EP 0 480 868 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
23.04.1997 Bulletin 1997/17

(51) Int Cl.[6]: **D21F 7/08**, D21F 9/02

(21) Application number: **91630081.7**

(22) Date of filing: **10.10.1991**

(54) A fabric for supporting a web

Gewebe zum Transportieren einer Papierbahn

Tissu pour transporter une bande de papier

(84) Designated Contracting States:
DE FR GB IT SE

(30) Priority: **11.10.1990 US 595910**

(43) Date of publication of application:
15.04.1992 Bulletin 1992/16

(60) Divisional application: **95200680.7**

(73) Proprietor: **BELOIT TECHNOLOGIES, INC.**
Wilmington, Delaware 19803 (US)

(72) Inventor: **Cronin, Dennis Callahan**
Rockton, Illinois 61072 (US)

(74) Representative: **Schmitz, Jean-Marie et al**
Dennemeyer & Associates Sàrl
P.O. Box 1502
1015 Luxembourg (LU)

(56) References cited:
AT-B- 301 325
US-A- 3 401 467
US-A- 4 483 745
US-A- 4 529 643
US-A- 4 738 752

EP 0 480 868 B1

Printed by Jouve, 75001 PARIS (FR)

Description

BACKGROUND OF THE INVENTION:

FIELD OF THE INVENTION:

The present invention relates to a fabric and a process for making such fabric for supporting a web in a papermaking machine.

INFORMATION DISCLOSURE STATEMENT:

In the papermaking art, a formed web is guided through a press section for removing as much water as possible from the formed web before guiding the pressed web into a drying section.

In view of the high thermal input requirements of a typical drying section, it is essential to remove as much water as possible from the web during passage through the press section.

A long-standing problem has been experienced in transferring a pressed web from a press section to a dryer section. Ideally, a press felt for supporting he web during passage through a pressing nip of the press section would thereafter convey the web towards and around at least an initial portion of the dryer section.

However, the aforementioned ideal arrangement has not proved practical because the press felt normally absorbs a large quantity of water from the web during passage of the web and press felt through the press nip, and unless the web and press felt are caused to diverge relative to each other immediately downstream relative to the press nip, the web becomes rewetted by the water laden press felt.

Accordingly, in the prior art, typically the press felt is guided around at least one guide roll such that the press felt diverges relative to the web immediately downstream relative to the press nip. Subsequently, a press-to-dryer transfer felt is led into guiding relationship with the web downstream relative to the press nip for guiding and supporting the web into and around the dryer section.

Alternatively, in many press-to-dryer transfer arrangements, a dryer felt will be extended into proximity with the press section such that the web is supported by the dryer felt and conveyed thereby to the dryer section.

In the aforementioned press-to-dryer transfer arrangements, the web, at some point between the press nip and the dryer section, is unsupported by either the press felt, a press-to-dryer transfer felt, or a dryer felt. Accordingly, such "open draw" of the web has necessitated relatively complex threading techniques in order to thread a tail of the web from the press section into a downstream dryer section.

The aforementioned "open draw" also involves handling the web when the web is relatively fragile and subject to web breakage.

US-A-4,483,745 to L. Wicks et al teaches a "no draw" press-to-dryer transfer utilizing a non-porous blanket which extends from an extended nip press arrangement to a downstream dryer section such that the web is conveyed by the non-porous blanket from the extended nip to the subsequent dryer section.

However, the aforementioned non-porous blanket, which supports the web, necessitates one-sided removal of the water pressed from the web during passage through the extended nip. Although in certain applications such one-sidedness of the resultant web is acceptable, if "two-sidedness" or uniformity in surface characteristics of the resultant web is required, the web must in some way be reversed in order to achieve the desired two-sidedness of the web.

AT-B-301 325 teaches the use of woof yarn providing a woven base and fiber bundles inserted through the base, for the production of a press felt.

In US-A-4 529 643, there is described a fabric for supporting a web according to the preamble of claim 1. More specifically US-A-4 529 643 discloses a press felt comprising a support fabric made of hydrophobic filaments and fiber bat layers applied onto each side of the support fabric.

A process for making a fabric according to the preamble of claim 11 is also known from US-A-4 529 643.

It is a primary object of the present invention to provide a fabric and a method of making such fabric that makes a considerable contribution to the papermaking art.

Another object of the present invention is the provision of a fabric having a relatively low permeability which permits water to be absorbed thereby while inhibiting rewetting of the web.

To achieve this, the fabric of the invention is characterized by the features claimed in the characterizing portion of claim 1 and the invention provides a method for making a fabric according to the characterizing portion of claim 11.

According to the invention, at least one of the layers fo the fibers applied onto each side of the base includes a mixture of TEFLON and fiberglass fibers. The layers and the base are at least partially fused together by the application of pressure and heat so that the fabric has a low permeability which permits water to be absorbed thereby while inhibiting rewetting of the web.

Although the need for the aforementioned fabric has long been recognized in the art, the manufacture of such fabric has eluded the efforts of press and dryer felt manufacturers.

The present invention was made and the unexpected results were obtained therefrom by passing a particular sample felt patch through a heated extended nip press of the type described in US-A-4,738,752. The resultant fabric had a caliper in the range of 1.7 microns (1/15 thousandth of an inch)and displayed a relatively smooth web supporting surface. When the fabric continued to support the web downstream relative to the heated extended nip, the unexpected discovery was

made that water had been absorbed by the fabric, but the web had not been appreciably rewetted by the fabric during passage of the fabric supported web downstream relative to the press nip.

Consequently, the implications of such non-rewetting fabric became immediately apparent. One application of such fabric would be as a press felt extending directly from a press nip to and around at least an initial portion of a dryer section. Such press-to-dryer transfer arrangement would permit complete support of the web without "open draw" from the press nip to the dryer section without the aforementioned problems of rewetting.

Furthermore, in view of the relatively smooth surface of the fabric, in the case of double felted pressing, it was evident that the web would consistently follow the smooth surface of the fabric rather than the comparatively rough surface of the felt on the other side of the web. Therefore, the web could be automatically guided from the press nip to and through the dryer section in a double felted press configuration without the need of suction or transfer blow boxes and the like.

A feature of the present invention is the provision of a fabric having a relatively smooth surface towards the web such that the web predictably follows the fabric when a felt and the fabric diverge relative to each other downstream of a double felted press arrangement.

Other features and advantages of the present invention will be evident to those skilled in the art by a consideration of the detailed description contained hereinafter taken in conjunction with the annexed drawings.

In a more particular embodiment of the present invention, the base includes a first plurality of the filaments which are disposed in a machine direction and a second plurality of the filaments disposed in a cross-machine direction with the machine and cross-machine directional filaments being woven together.

In one embodiment of the present invention, the hydrophobic filaments are of TEFLON, and the layers are needled into the first and the second sides respectively of the base. Furthermore, the mixture is of TEFLON and fiberglass fibers with the first and second layers of fibers having a denier which is less than the denier of the filaments.

In another embodiment of the present invention, both layers of fibers include a mixture of TEFLON and fiberglass fibers.

In a preferred embodiment of the present invention, the mixture of TEFLON and fiberglass fibers is in a ratio within the range 9:1 to 2:1.

In one embodiment of the present invention, the layers and the base are at least partially fused together by the application of pressure and heat. The fabric has an application particularly as a press fabric or as a press-to-dryer transfer fabric.

The present invention also includes a process for making a fabric for supporting a web in a papermaking machine. The process includes the steps of weaving a base from a first plurality of machine directional TEFLON filaments and a second plurality of cross-machine directional TEFLON filaments such that the woven base defines a first and a second side.

A first layer of fibers is needled into the first side of the base and a second layer of fibers is needled into the second side of the base. The first and the second layers of fibers are a mixture of TEFLON and fiberglass fibers such that the base and the layers of fibers form an uncompressed mat.

The mat is then pressed at an elevated temperature such that the layers and the base are at least partially fused together so that the resultant fabric attains a relatively smooth surface while retaining water-absorbing capabilities and inhibiting rewetting of the web.

In a preferred process for making the aforementioned fabric, the uncompressed mat is passed through a heated nip of a press such that the layers and the base at least partially fuse together so that the resultant felt includes at least one relatively smooth surface while maintaining water- absorbing capabilities and inhibiting release of water to the web supported thereon.

The fabric of the present invention is used in a papermaking apparatus for pressing and drying a web. The apparatus includes a press and a drying section disposed downstream relative to the press.

The press further includes a press member and a backing roll which cooperates with the press member for defining therebetween a press nip for pressing the web.

The fabric is disposed contiguously relative to the web and extending through the nip for supporting and guiding the web through the nip. Furthermore, a felt extends through the nip, the felt being disposed on the opposite side of the web relative to the fabric. The fabric defines a relatively smooth surface towards the web such that when the web exits the nip and the fabric and felt diverge relative to each other, the web follows the smooth surface of the fabric without being rewetted thereby.

The dryer section includes an upstream dryer and a guide roll which cooperates with the upstream dryer. The fabric extends from the nip to and around a portion of a heated outer surface of the upstream dryer, the fabric thereafter being guided away from the upstream dryer by the guide roll such that the web is guided without open draw from the nip to the dryer section without rewetting thereof by the fabric.

The fabric has a caliper within the range 1.27 to 2.54 microns (1/20 thousandth of an inch to 1 /10 thousandth of an inch).

In a preferred embodiment, the press also includes a backing felt which is disposed contiguously relative to the fabric for backing the fabric such that water from the web passes through the fabric into the backing felt. The fabric also inhibits flow of water from the backing felt that would otherwise cause rewetting of the web.

Many modifications and variations of the present in-

vention will be evident to those skilled in the art by a consideration of the detailed description contained hereinafter, taken in conjunction with the annexed drawings. However, such modifications and variations fall within the present invention as defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS:

Figure 1 is a sectional view of a fabric according to the present invention;

Figure 2 is a diagrammatic representation showing the steps of weaving a base, needling fibers therein, and pressing the resultant mat according to the present invention; and

Figure 3 is a side-elevational view of a papermaking apparatus according to the present invention including the fabric shown in Figure 1.

Similar reference characters refer to similar parts throughout the various views of the drawings.

DETAILED DESCRIPTION OF THE DRAWINGS:

Figure 1 is a sectional view of a fabric generally designated **10** for supporting a web in a papermaking machine. The fabric **10** includes a base generally designated **14** which defines a first and a second side **16** and **18** respectively. The base **14** also includes a plurality of hydrophobic filaments generally designated **20** and **22** respectively. A first layer of fibers **24** is disposed contiguously relative to the first side **16** with the first layer **24** of fibers being applied onto the first side **16** of the base **14**.

A second layer of fibers **26** is disposed contiguously relative to the second side **18** of the base **14**. The second layer of fibers **26** is applied onto the second side **18** of the base **14**. At least one of the layers of fibers **24**, **26** includes a mixture of hydrophobic and hydrophilic fibers, and the layers **24** and **26** and the base **14** are combined such that the fabric **10** has a low permeability permitting water to be absorbed thereby while inhibiting rewetting of the web.

As shown in Figure 1, the base **14** also includes a first plurality of filaments **28** which are disposed in a machine direction as indicated by the arrow **MD**. A second plurality of the filaments **30**,**31**,**32**,**33**,**34** and **35** are disposed in a cross-machine direction as indicated by the arrow **CD** with the machine and cross-machine directional filaments **28** and **30-35** being woven together.

The hydrophobic filaments **28** and **30-35** are of TEFLON, and the layers **24** and **26** are needled into the first and the second sides **16** and **18** respectively of the base **14**. TEFLON is a registered trademark of E. I. DuPont De Nemours & Company.

The second layer of fibers **26** is a mixture of fibers. The mixture of fibers includes TEFLON and fiberglass fibers, and the individual fibers of the first and second layers **24** and **26** have a denier which is less than the denier of the filaments **28** and **30**-**35**.

In a preferred embodiment of the present invention, as shown in Figure 1, both layers of fibers **24** and **26** include a mixture of TEFLON and fiberglass fibers **36** and **37** respectively. The mixture of TEFLON and fiberglass fibers is in a ratio within the range 9:1 to 2:1.

Figure 2 shows a process for making the aforementioned fabric **10** and shows the layers **24** and **26** and the base **14** as being at least partially fused together by the application of pressure and heat.

According to the present invention, the fabric **10** is a press fabric which extends through either a conventional roll couple defining a press nip or a press fabric extending through an extended nip press defined between an elongate press member and a cooperating backing roll for defining an extended nip.

The fabric **10** is also a press-to-dryer transfer fabric for fully supporting the web from a press nip to a downstream dryer section.

Figure 2 shows a process for making the fabric **10** for supporting a web **12** in a papermaking machine. The process comprises the steps of weaving a base **14** from a first plurality of machine directional TEFLON filaments **28** and a second plurality of cross-machine directional TEFLON filaments **30-35** such that the woven base **14** defines a first and a second side **16** and **18** respectively. A first layer of fibers **24** is needled by a needling means **25** into the first side **16** of the base **14**, and a second layer of fibers **26** is needled by a needling means **27** into the second side **18** of the base **14**. The first and the second layers of fibers **24** and **26** respectively are a mixture of TEFLON and fiberglass fibers **36** and **37** such that the base **14** and the layers **24** and **26** form an uncompressed mat **38.**

The mat **38** is then pressed at an elevated temperature by a roll press **39** such that the layers **24** and **26** and the base **14** are at least partially fused together so that the resultant fabric **10** attains a relatively smooth surface **40** while retaining water-absorbing capabilities and inhibiting rewetting of the web.

Preferably, the mat **38** is passed through a nip **42** of the press **39**, which is heated by induction heaters **44**, such that the layers **24** and **26** and the base **14** at least partially fuse together.

Figure 3 is a side-elevational view of a papermaking apparatus generally designated **46** for pressing and drying a web **W** shown by the dashed line. The apparatus **46** includes an extended nip press generally designated **47** and a drying section generally designated **48** disposed downstream relative to the press **47**. The press **47** further includes a press member **50** and a backing roll **52** cooperating with the press member **50** for defining therebetween a press nip **54** for pressing the web **W**.

The fabric **10**, as described hereinbefore, is disposed contiguously relative to the web **W** and extends through the nip **54** for supporting and guiding the web

W through the nip **54**.

A felt **56** extends through the nip **54** with the felt **56** being disposed on the opposite side **58** of the web **W** relative to the fabric **10**.

The fabric **10** defines a relatively smooth surface **40** towards the web **W** such that when the web **W** exits the nip **54**, and the fabric **10** and felt **56** diverge relative to each other, the web **W** follows the smooth surface **40** of the fabric **10** without being rewetted thereby.

The drying section **48** includes an upstream dryer **60**. A guide roll **62** cooperates with the upstream dryer **60**, and the fabric **10** extends from the nip **54** to and around a portion **64** of a heated outer surface **66** of the upstream dryer **60**. The fabric **10** thereafter is guided away from the upstream dryer **60** by the guide roll **62** such that the web **W** is guided without open draw from the nip **54** to the drying section **48** without rewetting thereof by the fabric **10**.

In a preferred embodiment of the present invention, the fabric **10** has a caliper within the range 1.27 to 2.54 microns (1/20 thousandth of an inch to 1/10 thousandth of an inch).

In a preferred embodiment of the present invention, as shown in Figure 3, the press **47** also includes a backing felt **68** which is disposed contiguously relative to the fabric **10** for backing the fabric **10** such that water from the web **W** passes through the fabric **10** into the backing felt **68**. The fabric **10** inhibits flow of water from the backing felt **68** that would otherwise cause rewetting of the web **W**.

The present invention provides a unique fabric which permits absorption thereby of water from a web supported on the fabric whiout inhibiting rewetting of the supported web. Additionally, the present invention enables the fabric of the present invention to support the web from the press nip to the dryer without rewetting the web while assuring predictable transfer of the web to the fabric in the case of a double felted pressing configuration.

Claims

1. A fabric (10) for supporting a web in a papermaking machine, said fabric (10) comprising:

a base (14) defining a first side (16) and a second side (18),
said base (14) including a plurality of hydrophobic filaments (28, 30-35),
a first layer of fibers (24) disposed contiguously relative to said first side (16), said first layer of fibers (24) being applied onto said first side (16) of said base (14),
a second layer of fibers (26) disposed contiguously relative to said second side (18) of said base (14), said second layer of fibers (26) being applied onto said second side (18) of said base (14),

characterized in that at least one of said layers of fibers (24, 26) includes a mixture of TEFLON (36) and fiberglass fibers (37), and

in that said layers (24, 26) and said base (14) are at least partially fused together by the application of pressure and heat so that the fabric (10) has a low permeability permitting water to be absorbed thereby while inhibiting rewetting of the web.

2. A fabric as set forth in claim 1, characterized in that said base (14) further includes:

a first plurality of said filaments (28) disposed in a machine direction (MD), and
a second plurality of said filaments (30-35) disposed in a cross-machine direction (CD),
said machine and cross-machine direction filaments (28, 30-35) being woven together.

3. A fabric as set forth in claim 1, characterized in that said hydrophobic filaments (28,30-35) are of TEFLON.

4. A fabric as set forth in claim 1, characterized in that said layers (24,26) are needled into said first and second sides (16,18) respectively of said base (14).

5. A fabric as set forth in claim 1, characterized in that said fibers of said first and second layers of fibers (24,26) have a denier which is less than the denier of said filaments (28,30-35).

6. A fabric as set forth in claim 1, characterized in that both layers of fibers (24,26) include a mixture of TEFLON (36) and fiberglass fibers (37).

7. A fabric as set forth in claim 1, characterized in that said mixture comprises TEFLON (36) and fiberglass fibers (37) in a ratio within the range 9:1 to 2:1.

8. A fabric as set forth in claim 1, characterized in that said base (14) includes a plurality of TEFLON filaments (28, 30-35).

9. A fabric as set forth in claim 8, characterized in that said fabric (10) is a press-to-dryer transfer fabric (10) for the papermaking machine.

10. A fabric as set forth in claim 1, characterized in that said fabric (10) has a caliper within the range 1.27 to 2.54 microns (1/20 thousandth of an inch to 1/10 thousandth of an inch).

11. A process for making a fabric (10) for supporting a web in a papermaking machine, said process comprising the steps of:

weaving a base (14) from a first plurality of machine directional hydrophobic filaments (28) and a second plurality of cross-machine directional hydrophobic filaments (30-35) such that the woven base (14) defines a first (16) and a second side (18),
needling a first layer of fibers (24) into the first side (16) of the base (14),
needling a second layer of fibers (26) into the second side (18) of the base (14),

characterized in that the first and second plurality of filaments (28, 30-35) are of TEFLON,

the first and second layers of fibers (24, 26) includes a mixture of TEFLON and fiberglass fibers (36,37) such that the base (14) and the layers of fibers (36,37) form an uncompressed mat (38), and
in comprising the step of pressing the mat (38) at an elevated temperature such that the layers (24,26) and the base (14) are at least partially fused together so that the resultant fabric (10) attains a relatively smooth surface while retaining water-absorbing capabilities and inhibiting rewetting of the web.

12. A process as set forth in claim 13, characterized in comprising the step of:
passing the mat (38) through a heated nip of a press such that the layers (24,26) and the base (14) at least partially fuse together so that the resultant felt includes at least one relatively smooth surface while maintaining water-absorbing capabilities and inhibiting release of water to the web supported thereon.

Revendications

1. Un tissu (10) pour supporter une bande dans une machine à fabriquer du papier, ledit tissu (10) comprenant:

une base (14) définissant un premier coté (16) et un second côté (18),
ladite base (14) comprenant une pluralité de filaments hydrophobes (28,30-35),
une première couche de fibres (24) disposée de façon contiguë par rapport audit premier côté (16), ladite première couche de fibres (24) étant appliquée sur ledit premier côté (16) de ladite base (14),
une seconde couche de fibres (26) disposée de façon contiguë par rapport audit second côté (18) de ladite base (14), ladite seconde couche de fibres (26) étant appliquée sur ledit second côté (18) de ladite base (14),

caractérisé en ce que au moins une desdites couches de fibres (24,26) comprend un mélange de TEFLON (36) et de fibres de verre (37), et
en ce que lesdites couches (24,26) et ladite base (14) sont au moins partiellement fusionnées ensemble par l'application de pression et de chaleur de sorte que le tissu (10) a une perméabilité faible permettant à l'eau d'être absorbée de ce fait tout en empêchant un remouillage de la bande.

2. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que ladite base (14) comprend en outre:

une première pluralité desdits filaments (28) disposée dans une direction machine (MD), et une seconde pluralité desdits filaments (30-35) disposée dans une direction transversale à la machine (CD),
lesdits filaments dans des directions machine et transversale à la machine (28,30-35) étant tissés ensemble.

3. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que lesdits filaments hydrophobes (28,30-35) sont en TEFLON.

4. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que lesdites couches (24,26) sont aiguilletées dans lesdits premier et second côtés (16,18) respectivement de ladite base (14).

5. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que lesdites fibres desdites première et seconde couches de fibres (24,26) ont un denier qui est inférieur au denier desdits filaments (28,30-35).

6. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que les deux couches de fibres (24,26) comprennent un mélange de TEFLON (36) et de fibres de verre (37).

7. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que ledit mélange comprend du TEFLON (36) et des fibres de verre (37) en un rapport compris dans la gamme 9:1 à 2:1.

8. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que ladite base (14) comprend une pluralité de filaments de TEFLON (28,30-35).

9. Un tissu tel qu'exposé à la revendication 8, caractérisé en ce que ledit tissu (10) est un tissu de trans-

fert de la presse jusqu'au sécheur (10) pour la machine à fabriquer du papier.

10. Un tissu tel qu'exposé à la revendication 1, caractérisé en ce que ledit tissu (10) a une épaisseur dans la gamme de 1,27 à 2,54 microns (1/20 millièmes de pouce à 1/10 millième de pouce).

11. Un procédé pour fabriquer un tissu (10) pour supporter une bande dans une machine à fabriquer du papier, ledit procédé comprenant les étapes de:

tisser une base (14) à partir d'une première pluralité de filaments hydrophobes dans une direction machine (28) et une seconde pluralité de filaments hydrophobes dans une direction transversale à la machine (30-35) de sorte que la base tissée (14) définit un premier (16) et un second (18) côtés,
aiguilleter une première couche de fibres (24) dans le premier côté (16) de la base (14),
aiguilleter une seconde couche de fibres (26) dans le second côté (18) de la base (14),

caractérisé en ce que les première et seconde pluralités de filaments (28,30-35) sont en TEFLON,

les première et seconde couches de fibres (24,26) comprennent un mélange de TEFLON et de fibres de verre (36,37) de sorte que la base (14) et les couches de fibres (36,37) forment un matelas non comprimé (38), et
en ce qu'il comprend l'étape de presser le matelas (38) à une température élevée de sorte que les couches (24,26) et la base (14) sont au moins partiellement fusionnées ensemble de sorte que le tissu résultant (10) acquiert une surface relativement lisse tout en maintenant les capacités d'absorption de l'eau et en empêchant un remouillage de la bande.

12. Un procédé tel qu'exposé à la revendication 11, caractérisé en ce qu'il comprend l'étape de:
passer le matelas (38) à travers un pincement chauffé d'une presse de sorte que les couches (24,26) et la base (14) fusionnent au moins partiellement ensemble de sorte que le feutre résultant comprend au moins une surface relativement lisse tout en maintenant les capacités d'absorption de l'eau et en empêchant la libération de l'eau vers la bande supportée sur ce dernier.

Patentansprüche

1. Gewebe (10) zum Stützen einer Papierbahn in einer Papiermaschine, wobei das Gewebe (10) umfasst:

eine Basis (14), die eine erste Seite (16) und eine zweite Seite (18) definiert,

wobei die Basis (14) eine Vielzahl von hydrophoben Elementarfäden (28, 30 - 35) umfasst,

eine erste Schicht (24) aus Fasern, die nebeneinander liegend bezüglich der ersten Seite (16) angeordnet ist, wobei die erste Schicht (24) aus Fasern auf der ersten Seite (16) der Basis (14) angebracht ist,

eine zweite Schicht (26) aus Fasern, die nebeneinander liegend bezüglich der zweiten Seite (18) der Basis (14) angeordnet ist, wobei die zweite Schicht (26) aus Fasern auf der zweiten Seite (18) der Basis (14) angebracht ist,

dadurch gekennzeichnet, dass mindestens eine der Seiten (24, 26) aus Fasern eine Mischung aus TEFLON- (36) und Fiberglasfasern (37) umfasst, und
dass die Schichten (24, 26) und die Basis (14) durch die Anwendung von Druck und Wärme mindestens teilweise zusammengeschmolzen sind, so dass das Gewebe (10) eine kleine Durchlässigkeit hat welche erlaubt, dass dadurch Wasser absorbiert wird, während ein Wiederbenetzen der Papierbahn verhindert wird.

2. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass die Basis (14) weiter umfasst:

eine erste Vielzahl der Elementarfäden (28), die in einer Maschinenrichtung (MD) angeordnet sind,

eine zweite Vielzahl der Elementarfäden (30 - 35), die quer zur Maschinenrichtung (CD) angeordnet sind,

wobei die Elementarfäden in Maschinenrichtung und quer zur Maschinenrichtung (28, 30 - 35) miteinander verwebt sind.

3. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass die hydrophoben Elementarfäden (28, 30 - 35) aus TEFLON bestehen.

4. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass die Schichten (24, 26) in die erste respektive die zweite Seite (16, 18) der Basis (14) hinein vernadelt sind.

5. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass die Fasern der ersten und zweiten Schichten (24, 26) aus Fasern ein Denier haben, das kleiner ist als das Denier der Elementarfäden (28, 30 -

35).

6. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass beide Schichten (24, 26) aus Fasern eine Mischung aus TEFLON- (36) und Fiberglasfasern (37) umfassen.

7. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass die Mischung TEFLON- (36) und Fiberglasfasern (37) in einem Verhältnis innerhalb des Bereichs von 9:1 bis 2:1 umfasst.

8. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass die Basis (14) eine Vielzahl von TEFLON-Elementarfäden (28, 30 - 35) umfasst.

9. Gewebe nach Anspruch 8, dadurch gekennzeichnet, dass das Gewebe (10) ein Presse-zu-Trockner Transportgewebe (10) für die Papiermaschine ist.

10. Gewebe nach Anspruch 1, dadurch gekennzeichnet, dass das Gewebe (10) eine Dicke innerhalb des Bereichs von 1.27 bis 2.54 Mikron (1/20 Tausendstel eines Inch bis 1/10 Tausendstel eines Inch) hat.

11. Verfahren für die Herstellung eines Gewebes (10) zum Stützen einer Papierbahn in einer Papiermaschine, wobei das Verfahren die Schritte umfasst:

aus einer ersten Vielzahl von hydrophoben Elementarfäden (28) in Maschinenrichtung und einer zweiten Vielzahl von hydrophoben Elementarfäden (30 - 35) quer zur Maschinenrichtung eine Basis (14) so zu weben, dass die gewebte Basis (14) eine erste (16) und eine zweite Seite (18) definiert,

eine erste Schicht (24) aus Fasern in die erste Seite (16) der Basis (14) hinein zu vernadeln,

eine zweite Schicht (26) aus Fasern in die zweite Seite (18) der Basis (14) hinein zu vernadeln,

dadurch gekennzeichnet, dass die erste und zweite Vielzahl von Elementarfäden (28, 30 - 35) aus TEFLON besteht,

die erste und die zweite Schicht aus Fasern (24, 26) eine Mischung aus TEFLON- und Fiberglasfasern (36, 37) umfasst, so dass die Basis (14) und die Schichten aus Fasern (36, 37) eine ungepresste Matte (38) bilden, und

dass es den Schritt umfasst, die Matte (38) bei einer erhöhten Temperatur zu pressen, so dass die Schichten (24, 26) und die Basis (14) mindestens teilweise zusammengeschmolzen werden, damit das resultierende Gewebe (10) eine relativ glatte Oberfläche erhält, während es die wasserabsorbierenden Fähigkeiten beibehält und ein Wiederbenetzen der Papierbahn verhindert.

12. Verfahren nach Anspruch 11, dadurch gekennzeichnet, dass es den Schritt umfasst:

die Matte (38) durch einen geheizten Walzenspalt einer Presse hindurch zu führen, so dass die Schichten (24, 26) und die Basis (14) mindestens teilweise zusammenschmelzen, damit der resultierende Filz mindestens eine relativ glatte Oberfläche umfasst, während er die wasserabsorbierenden Fähigkeiten beibehält und das Abgeben von Wasser an die Papierbahn, die darauf getragen wird, verhindert.

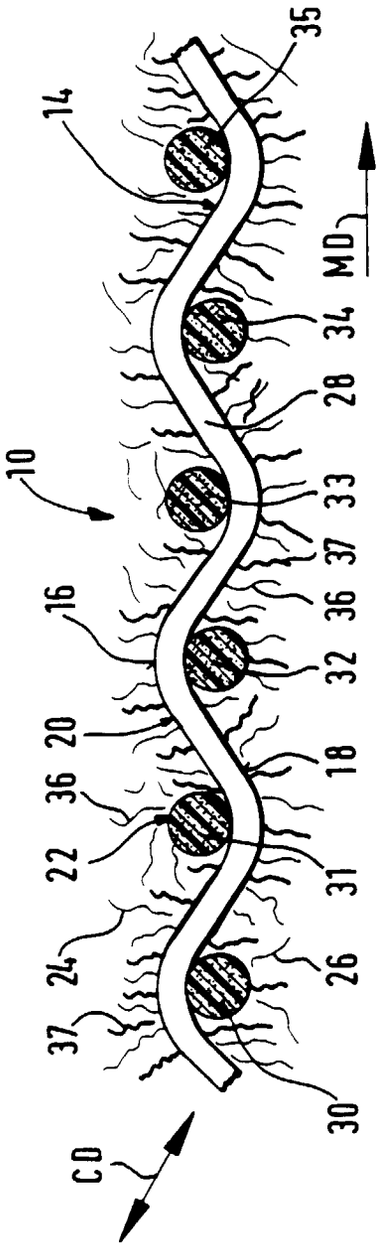
CD
MD
10
14
16
18
20
22
24
26
28
30
31
32
33
34
35
36
37

Fig. 1

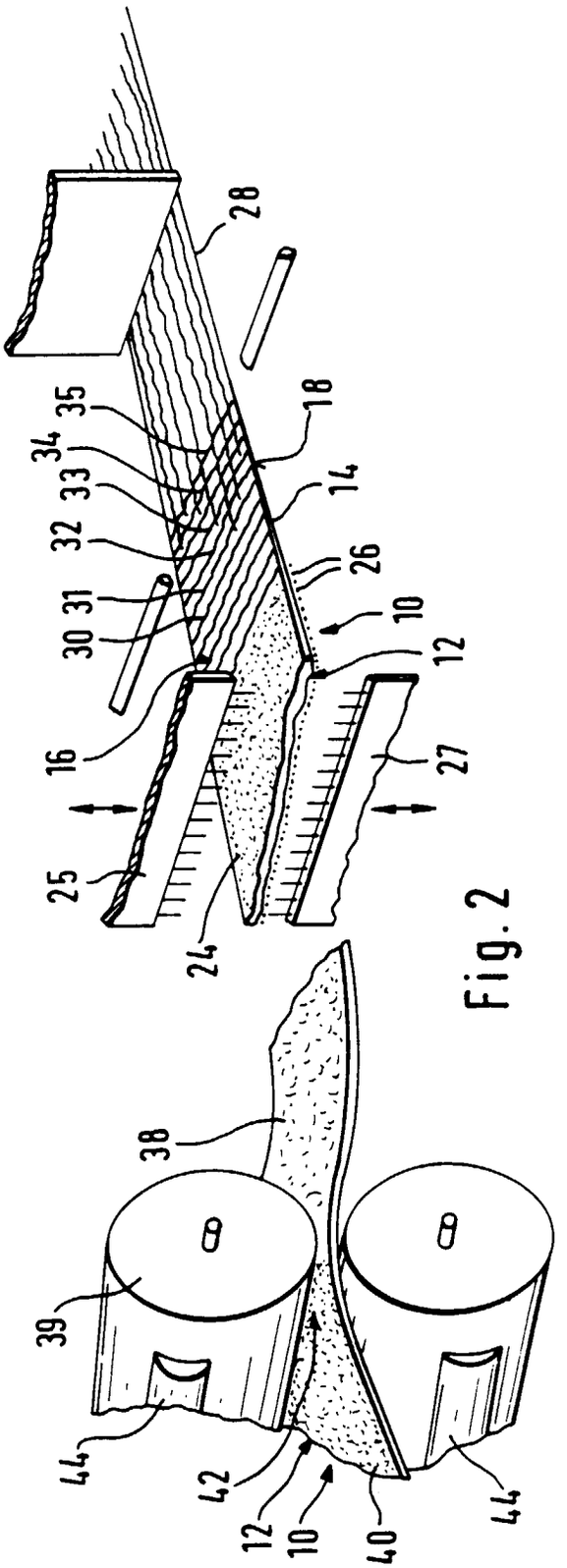
10
12
14
16
18
24
25
26
27
28
30
31
32
33
34
35
38
39
40
42
44

Fig. 2

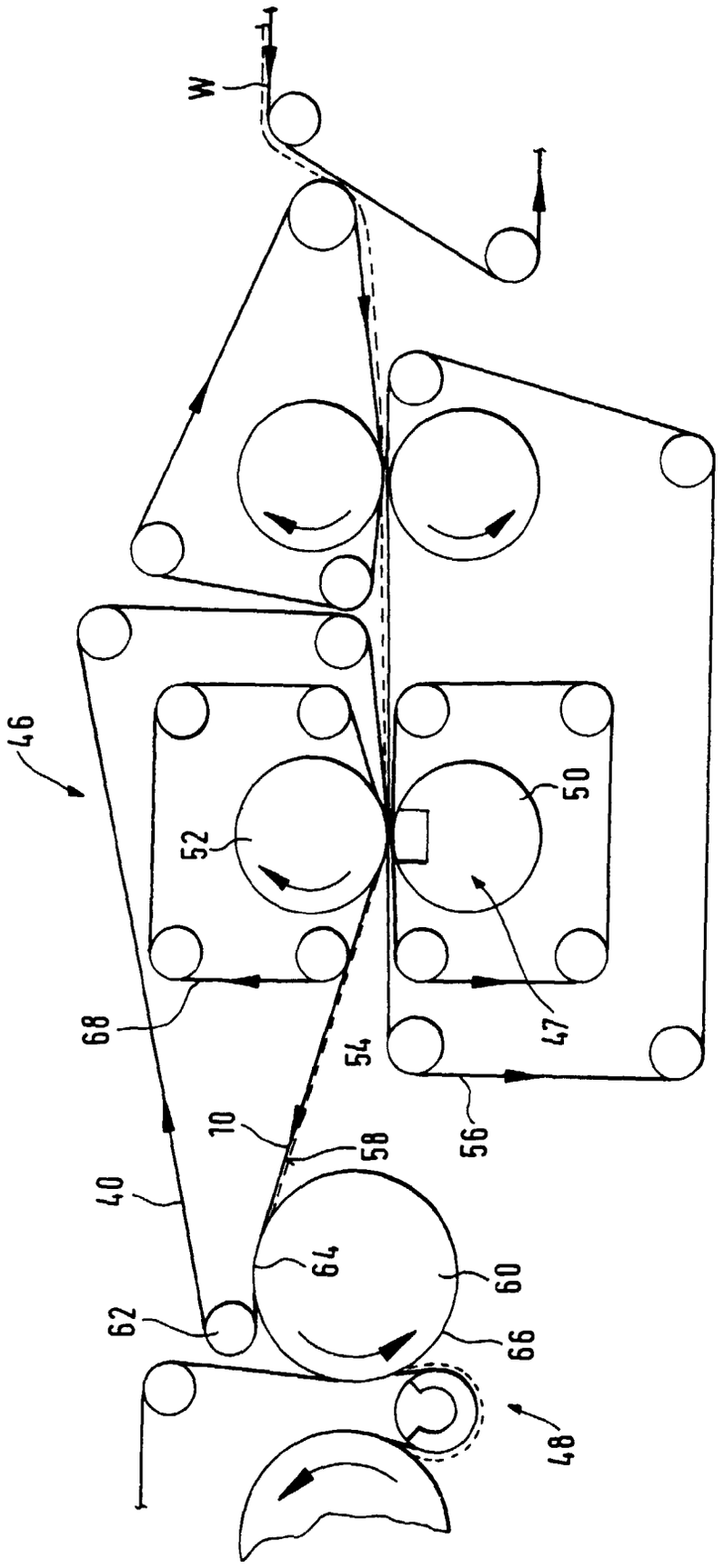

Fig.3